

# UNCLASSIFIED

AD NUMBER
AD857479
NEW LIMITATION CHANGE
TO Approved for public release, distribution unlimited
FROM Distribution authorized to U.S. Gov't. agencies and their contractors; Administrative/Operational Use; AUG 1969. Other requests shall be referred to Atmospheric Science Office, White Sands Missile Range, NM.
AUTHORITY
USAEC ltr 13 Sep 1971

THIS PAGE IS UNCLASSIFIED

THIS DOCUMENT IS SUBJECT TO SPECIAL EXPORT CONTROLS AND EACH TRANSMITTAL TO FOREIGN GOVERNMENTS OR FOREIGN NATIONALS MAY BE MADE ONLY WITH PRIOR APPROVAL OF ATMOSPHERIC SCIENCES OFFICE, WHITE SANDS MISSILE RANGE, NEW MEXICO.

DR-449

August 1969

AD

AD857479

METEOROLOGICAL DATA REPORT

NIKE-HYDAC STV-88  
(10 July 1969)

AND

NIKE-HYDAC, BALLISTIC ROUND  
(10 July 1969)

BY

LEN E. CARTER

ATMOSPHERIC SCIENCES OFFICE  
WHITE SANDS MISSILE RANGE, NEW MEXICO

SEP 2 1969

ECOM

UNITED STATES ARMY ELECTRONICS COMMAND

47

METEOROLOGICAL DATA REPORT

NIKE-HYDAC SIV-88  
(10 July 1969)

And

NIKE-HYDAC, BALLISTIC ROUND  
(10 July 1969)

By

Leu E. Carter

DR-449

August 1969

DA Task 1T665702D127-02

ATMOSPHERIC SCIENCES OFFICE  
WHITE SANDS MISSILE RANGE, NEW MEXICO

This document is subject to special export controls and each transmittal to foreign governments or foreign nationals may be made only with prior approval of Atmospheric Sciences Office, White Sands Missile Range, New Mexico.

#### ABSTRACT

Meteorological data gathered for the launching of Nike-Hydac STV-88 and Nike-Hydac Ballistic Round are presented for the Space and Missile Systems Organization, AFMPC, Holloman Air Force Base, New Mexico and for ballistic studies. The data appear, along with calculated ballistic data, in tabular form.

## CONTENTS

	PAGE
ABSTRACT -----	iii
INTRODUCTION -----	1
DISCUSSION -----	1
 TABLES	
I. Theoretical Rocket Performance Values, STV-88 -----	2
II. Theoretical Rocket Performance Values, Ballistic Round -----	3
III. Ballistic Factors, STV-88 -----	4
IV. Ballistic Factors, Ballistic Round -----	5
V. Anemometer Wind Speed & Direction -----	6
VI. Pilot-Balloon-Measured Wind Data -----	7
VII. Rawinsonde-Measured Wind Data, STV-88 -----	9
VIII. Rawinsonde-Measured Wind Data, Ballistic Round -----	10
IX. Significant Level Data (Release Time: 0830 MDT) -----	11
X. Upper Air Data (Release Time: 0830 MDT) -----	12
XI. Mandatory Levels (Release Time: 0830 MDT) -----	19
XII. Significant Level Data (Release Time: 1100 MDT) -----	20
XIII. Upper Air Data (Release Time: 1100 MDT) -----	21
XIV. Mandatory Levels (Release Time: 1100 MDT) -----	29

## INTRODUCTION

Nike-Hydac STV-88 was launched from Launch Complex 33, L-314, White Sands Missile Range, New Mexico, at 1130 hours MDT, 10 July 1969.

Nike-Hydac Ballistic Round was launched from Launch Complex 33, L-361, White Sands Missile Range, New Mexico, at 1230 hours MDT, 10 July 1969.

Meteorological data used in conjunction with theoretical calculations to predict rocket impact were collected by the Meteorological Support Division, U.S. Army Electronics Research and Development Activity, White Sands Missile Range, New Mexico. Ballistics Meteorologists for these firings were Len E. Carter and John M. Sharpe.

## DISCUSSION

Wind data for the first 216 feet above the surface were obtained from a system composed of five Aerovanes mounted on a 200-foot tower and cabled to component wind indicators.

From 216 to 4,000 feet above the surface, wind data were obtained from T-9 Radar-observed balloon ascents.

Temperature, pressure, and humidity data, along with upper wind data from 4,000 to 70,000 feet above the surface, were obtained from standard rawinsonde observations.

Mean wind component values in each ballistic zone were determined from vertical cross sections by the equal-area method.

Theoretical rocket performance values and wind-weighting values as a function of altitude were provided by the Atmospheric Sciences Office and are the basis for the data appearing in Table I.

PAYLOAD		225	Pounds
CORIOLIS DISPLACEMENT	WEST	4.2	Miles
SECOND-STAGE IGNITION	TIME	20.0	Seconds
	ALTITUDE	35,576	Feet MSL
PEAK	TIME	232	Seconds
	ALTITUDE	696,560	Feet MSL
UNIT WIND EFFECT	RANGE	2.06	Miles/MPH
	CROSS	2.13	Miles/MPH
			Miles/MPH
TOWER TILT EFFECT		13.8	Miles/Degree

TABLE II. THEORETICAL ROCKET PERFORMANCE VALUES  
NIKE-HYDAC, BALLISTIC ROUND

LAYERS IN FEET ABOVE GROUND	BALLISTIC FACTORS
11- 60	.1350
60- 108	.0750
108- 148	.0700
148- 184	.0310
184- 216	.0290
216- 300	.0520
300- 400	.0480
400- 600	.0820
600- 800	.0580
800-1000	.0390

LAYERS IN FEET ABOVE GROUND	BALLISTIC FACTORS
1000- 1400	.0710
1400- 2000	.0650
2000- 2500	.0310
2500- 3000	.0270
3000- 3500	.0100
3500- 4160	.0090
4160-11000	-.0240
11000-16000	-.0180
16000-21000	-.0180
21000-26000	-.0120

LAYERS IN FEET ABOVE GROUND	BALLISTIC FACTORS
26000-31770	-.0120
31770-36000	.1320
36000-41000	.0580
41000-46000	.0320
46000-55000	.0180
56000-66000	.0110
66000-73300	.0010

TABLE III. BALLISTIC FACTORS  
NIKE-HYDAC STV-88



LAYERS IN FEET ABOVE GROUND	BALLISTIC FACTORS
11- 60	.1265
60- 108	.0844
108- 148	.0535
148- 184	.0410
184- 216	.0235
216- 300	.0592
300- 400	.0520
400- 600	.0790
600- 800	.0530
800-1000	.0407

LAYERS IN FEET ABOVE GROUND	BALLISTIC FACTORS
1000- 1400	.0742
1400- 2000	.0669
2000- 2500	.0341
2500- 3000	.0227
3000- 3500	.0143
3500- 4000	.0051
4000- 5000	-.0051
5000- 9000	-.0117
9000-15000	-.0168
15000-21000	-.0160

LAYERS IN FEET ABOVE GROUND	BALLISTIC FACTORS
21000-26000	-.0096
26000-31000	-.0048
31000-36000	.1288
36000-41000	.0546
41000-46000	.0256
46000-51000	.0152
51000-56000	.0093
56000-61000	.0016

TABLE IV. BALLISTIC FACTORS  
NIKE-HYDAC, BALLISTIC ROUND

AERO- VANE NO. *	MEAN WIND COMPONENTS IN MILES PER HOUR													
	1 0935 MDT		2 1000 MDT		3 1030 MDT		4 1045 MDT		5 1100 MDT		6 1110 MDT		7 1120 MDT	
	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W
1	5.0N	0.0	6.0N	1.0E	2.0N	2.0E	0.0	0.0	0.0	0.0	0.0	0.0	2.0N	0.0
2	6.0	0.0	6.0	2.0	2.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	1.0
3	6.0	0.0	6.5	2.0	2.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	1.0
4	7.0	0.0	7.0	2.5	2.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	1.0
5	6.0	0.0	7.0	2.0	2.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0

AERO- VANE NO. *	MEAN WIND COMPONENTS IN MILES PER HOUR											
	8 1130 MDT		9 1150 MDT		10 1200 MDT		11 1210 MDT		12 1220 MDT		13 1230 MDT	
	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W
1	0.0	0.0	3.0N	2.0E	4.0N	2.0E	3.0N	1.0E	5.0N	2.0E	4.0N	1.0E
2	1.0	0.0	3.0	1.0	3.0	2.0	4.0	1.0	5.0	3.0	4.0	2.0
3	2.0	0.0	3.0	1.0	2.0	1.0	4.0	1.0	6.0	3.0	4.0	2.0
4	2.0	0.0	4.0	2.0	3.0	2.0	4.0	2.0	6.0	3.0	6.0	2.0
5	2.0	0.0	3.0	2.0	3.0	2.0	4.0	2.0	4.0	3.0	5.0	2.0

TABLE V. ANEMOMETER WIND SPEED AND DIRECTION  
NIKE-HYDAC STV-88, AND BALLISTIC ROUND

\* Heights corresponding to Aerovane Numbers: 1 = 35 Feet 3 = 128 Feet 5 = 200 Feet  
2 = 88 Feet 4 = 168 Feet

LAYERS IN FEET ABOVE GROUND	MEAN WIND COMPONENTS IN MILES PER HOUR											
	1		2		3		4		5		6	
	0935 MDT		1000 MDT		1030 MDT		1045 MDT		1100 MDT		1110 MDT	
	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W
216- 300	3.0N	1.5W	7.0N	2.0E	2.0N	4.0E	2.0S	1.0E	2.0N	1.5W	0.0	0.5E
300- 400	3.0	1.5	7.0	2.5	2.0	4.0	0.5	2.0	2.5	1.0E	3.0N	1.0
400- 600	5.0	0.0	6.5	2.0	1.5	3.5	1.0N	2.0	2.0	1.5	3.0	0.5
600- 800	6.5	1.0E	5.5	2.5	1.5	3.0	1.0	1.5	1.5	0.5	3.5	0.5
800-1000	7.5	2.0	5.0	3.0	1.0	3.0	1.5	3.0	1.5	1.5W	2.5	0.5
1000-1400	6.5	0.0	6.0	1.0	2.0	2.0	1.0	2.0	2.5	1.5E	3.0	0.0
1400-2000	5.5	0.0	4.0	2.5	1.0W	3.0	1.0S	0.5	0.5S	0.0	0.0	0.0
2000-2500	2.5	0.5	1.5	0.5	2.5	0.5	3.0	0.5	3.0	0.5W	5.5S	2.0W
2500-3000	0.5S	3.5	0.0	3.0	8.0	1.5	8.5	2.5	8.0	0.0	11.0	1.0
3000-3500	5.0	3.5	5.0S	3.5	10.5	2.0	10.5	2.0	11.5	1.0E	14.0	0.5
3500-4160	6.5	3.0	7.0S	3.0	10.0S	1.0	11.0	0.5W	15.0	1.5	15.0	2.0

TABLE VI. PILOT-BALLOON-MEASURED WIND DATA  
NIKE-HYDAC STV-88 AND BALLISTIC ROUND

LAYERS IN FEET ABOVE GROUND	MEAN WIND COMPONENTS IN MILES PER HOUR									
	8		9		10		11		12	
	1130 MDT		1150 MDT		1200 MDT		1210 MDT		1220 MDT	
	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W
216- 300	2.0N	0.5E	1.0N	2.0E	3.0N	2.0E	4.0N	2.5E	4.0N	2.5E
300- 400	3.0	1.0	1.5	3.0	2.0	2.0	4.0	3.5	2.5	1.5
400- 600	2.5	0.5	4.0	3.5	3.0	2.5	3.0	1.5	4.5	2.0
600- 800	2.0	0.0	2.0	4.0	2.5	2.5	3.0	3.0	6.5	2.5
800-1000	4.0	0.5W	3.0	3.0	3.0	1.0	5.5	3.0	6.0	1.0
1000-1400	2.5	0.0	2.0	1.0	2.5	0.5W	3.5	1.0	3.0	0.5
1400-2000	1.5S	0.5W	3.5S	1.5W	1.0S	1.5	2.0S	0.5W	3.0S	1.0W
2000-2500	8.5	2.0	9.0	3.0	6.5	3.0	7.5	1.5	6.5	0.0
2500-3000	11.5	1.5	10.5	2.0	9.0	2.5	9.0	1.5	7.0	0.5W
3000-3500	12.0	1.5	14.0	3.5	11.0	1.0	9.5	2.0	6.0	1.0E
3500-4160	13.0	1.5	12.0	3.5	10.0	3.0	7.0	2.0	4.5	0.5W

TABLE VI. PILOT-BALLOON-MEASURED WIND DATA (CONT)  
NIKE-HYDAC STV-88 AND BALLISTIC ROUND

LAYERS IN FEET ABOVE GROUND	MEAN WIND COMPONENTS IN KNOTS					
	1		2			
	0830 MDT		1100 MDT			
	N-S	E-W	N-S	E-W	N-S	E-W
4160-11000	14.0S	2.5W	13.0S	0.0		
11000-16000	18.5	3.5	15.0	2.5W		
16000-21000	18.0	0.0	12.0	2.0		
21000-26000	7.0	4.0W	7.0	2.5		
26000-31770	8.5	3.0E	10.5	6.0		
31770-36000	11.0	0.0	11.0	6.5		
36000-41000	16.0	2.5E	16.5	3.0		
41000-46000	11.0	2.0	13.0	5.0		
46000-56000	5.5	15.0	9.5	11.5		
56000-66000	0.0	21.0	4.0	21.5		
66000-73300	0.0	29.0	4.5	25.5		

TABLE VII. RAWINSONDE-MEASURED WIND DATA  
NIKE-HYDAC STV-88

LAYERS IN FEET ABOVE GROUND	MEAN WIND COMPONENTS IN KNOTS					
	1 0830 MDT		2 1100 MDT		3 1315 MDT	
	N-S	E-W	N-S	E-W	N-S	E-W
4000-5000	8.0S	2.5E	10.0S	1.5W	2.5S	3.0E
5000-9000	15.0	5.5W	12.0	0.0	12.0	0.0
9000-15000	18.5	3.5	16.0	3.0W	19.0	0.0
15000-21000	13.0	0.0	13.0	2.5	10.5	4.0W
21000-26000	7.0	4.0W	7.0	2.5	6.0	1.0E
26000-31000	8.0	2.5E	9.5	5.5E	13.0	2.5
31000-36000	11.0	2.0	11.0	6.5	16.0	2.5
36000-41000	16.0	2.5	16.5	3.0	16.0	3.0W
41000-46000	11.0	2.0	13.0	5.0	12.0	2.0E
46000-51000	7.5	13.0	7.5	9.0	9.0	15.5
51000-56000	6.0	17.0	13.5	16.0	5.0	13.0
56000-61000	0.0	18.0	0.0	18.0	0.0	18.0

TABLE VIII. RAWINSONDE-MEASURED WIND DATA  
NIKE-HYDAC BALLISTIC ROUND

STATION ALTITUDE 3985.00 FEET MSL  
10 JULY 65 0830 HRS MDT  
ASCENSION NC. 673

SIGNIFICANT LEVEL DATA  
0031003904  
WHITE SANDS

WSJM SITE COORDINATES  
489500.00 FEET E  
185045.00 FEET N

TABLE IX

PRESSURE GEOMETRIC		TEMPERATURE		REL. HUM.
ALTITUDE	MILLIBARS	AIR	DEWPOINT	
FEET		DEGREES	CENTIGRADE	PERCENT
3985.0	683.0	18.4	17.5	94.0
4211.8	673.0	15.6	17.7	88.0
5639.4	633.0	18.1	14.1	77.0
12241.3	656.0	6.8	4.7	66.0
19064.8	507.0	-4.9	-5.9	93.0
19476.0	499.0	-5.9	-10.5	70.0
19944.7	490.0	-6.6	-13.5	58.0
22119.6	450.0	-10.2	-15.2	67.0
22746.0	439.0	-11.4	-18.3	57.0
23738.2	422.0	-14.0	-18.4	70.0
24216.4	414.0	-14.2	-21.2	56.0
31461.4	307.0	-25.5	-38.9	40.0
32080.2	299.0	-30.7	-49.0	15.0
41570.6	195.0	-35.1	0.	-0. **
46418.5	154.0	-65.6	0.	-0. **
45654.6	131.0	-66.3	0.	-0. **
53275.4	109.0	-72.2	0.	-0. **
54951.9	100.0	-71.4	0.	-0. **
63795.1	64.0	-64.8	0.	-0. **
70572.7	46.0	-57.1	0.	-0. **
89458.5	19.0	-47.8	0.	-0. **
97037.9	13.5	-41.0	0.	-0. **
103766.9	10.0	-43.1	0.	-0. **
105640.9	9.2	-40.2	0.	-0. **

\*\* RELATIVE HUMIDITY NOT SUPPLIED. ZERO VALUE ASSUMED FOR COMPUTATIONS.

STATION ALTITUDE 3989.00 FEET MSL  
10 JULY 65 0830 HRS MDT  
ASCENSION NO. 673

UPPER AIR DATA  
0031003904  
WHITE SANDS

WSTM SITE COORDINATES  
488580.00 FEET E  
185045.00 FEET N

TABLE X

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND		WIND DATA		INDEX OF REFRACTION
		AIR DEGREES	DEWPOINT CENTIGRADE			SPEED KNOTS	SOUND KNOTS	DIRECTION DEGREES(TN)	SPEED KNOTS	
3989.0	883.0	18.4	17.5	94.0	1046.2	667.7		30.0	1.9	1.000322
4000.0	882.7	18.4	17.5	93.8	1045.7	667.8		30.4	1.9	1.000322
4500.0	867.2	19.4	17.2	86.4	1024.1	668.8		48.5	2.1	1.000315
5000.0	852.0	18.8	15.9	82.3	1008.7	668.0		66.5	2.2	1.000304
5500.0	837.1	18.3	14.5	78.2	993.5	667.2		84.6	2.4	1.000295
6000.0	822.2	17.5	13.6	77.5	978.7	666.2		102.7	2.5	1.000288
6500.0	807.5	16.6	12.9	76.2	964.1	665.1		119.1	3.2	1.000282
7000.0	793.0	15.8	12.2	78.9	949.8	664.1		133.5	4.7	1.000276
7500.0	778.8	14.9	11.5	75.5	935.8	663.0		143.6	5.0	1.000270
8000.0	764.8	14.1	10.8	80.2	921.9	662.0		150.8	7.2	1.000265
8500.0	751.1	13.2	10.1	80.9	908.2	660.9		160.9	8.3	1.000259
9000.0	737.6	12.3	9.4	81.6	894.8	659.9		171.6	9.4	1.000254
9500.0	724.4	11.5	8.6	82.3	881.5	658.9		178.4	10.3	1.000249
10000.0	711.4	10.6	7.9	82.9	868.5	657.8		185.0	11.2	1.000244
10500.0	698.7	9.8	7.2	83.6	855.7	656.8		191.6	12.1	1.000239
11000.0	686.1	8.9	6.5	84.3	843.0	655.7		197.4	12.9	1.000234
11500.0	673.8	8.1	5.7	85.0	830.6	654.7		200.0	14.0	1.000229
12000.0	661.8	7.2	5.0	85.7	818.3	653.6		200.9	15.4	1.000224
12500.0	649.6	6.4	4.3	86.3	805.9	652.5		199.7	17.1	1.000220
13000.0	637.5	5.5	3.5	86.8	793.4	651.5		197.1	17.8	1.000215
13500.0	625.6	4.6	2.7	87.3	781.1	650.4		193.8	18.3	1.000211
14000.0	613.9	3.8	2.0	87.8	769.0	649.4		189.1	19.1	1.000206
14500.0	602.4	2.9	1.2	88.3	757.0	648.3		185.4	19.5	1.000202
15000.0	591.1	2.1	0.4	88.8	745.3	647.3		182.9	19.4	1.000198
15500.0	580.1	1.2	-0.3	89.3	733.8	646.2		180.8	20.2	1.000193
16000.0	568.2	0.4	-1.1	89.9	722.4	645.2		179.1	21.4	1.000189
16500.0	558.6	-0.5	-1.9	90.4	711.2	644.1		178.6	21.5	1.000186
17000.0	548.1	-1.4	-2.7	90.9	700.2	643.0		178.3	21.4	1.000182
17500.0	537.9	-2.2	-3.4	91.4	689.4	642.0		176.2	20.5	1.000178
18000.0	527.8	-3.1	-4.2	91.9	678.7	640.9		174.2	19.4	1.000174



STATION ALTITUDE 2407.00 FEET MSL  
10 JULY 69 0830 HRS MDT  
ASCENSION NC. 673

UPPER AIR DATA  
CC31C03904  
WHITE SANDS

WSTM SITE COORDINATES  
486580.00 FEET E  
185045.00 FEET N

TABLE X (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		REL. HUM. PERCENT	DENSITY GM/CCUBIC METER	SPEED OF SOUND		WIND DATA		INDEX OF REFRACTION
		AIR DEGREES CENTIGRADE	DEWPOINT CENTIGRADE			KNOTS	KNOTS	DIRECTION DEGREES(TN)	SPEED KNOTS	
18500.0	517.9	-2.9	-5.0	92.4	668.2	639.9	173.0	173.0	17.3	1.000171
19000.0	508.2	-4.8	-5.8	92.9	657.9	638.8	172.8	172.8	15.7	1.000167
19500.0	498.5	-5.9	-10.7	65.4	648.7	637.2	174.0	174.0	14.9	1.000159
20000.0	488.9	-6.7	-12.6	58.2	638.3	636.1	175.1	175.1	15.0	1.000154
20500.0	479.5	-7.5	-13.9	60.3	627.9	635.1	176.1	176.1	15.4	1.000151
21000.0	470.2	-8.3	-14.3	62.4	617.6	634.1	177.8	177.8	14.9	1.000149
21500.0	461.1	-9.2	-14.7	64.4	607.6	633.1	179.7	179.7	13.8	1.000146
22000.0	452.1	-10.0	-15.1	66.5	597.7	632.1	182.2	182.2	11.4	1.000144
22500.0	443.5	-10.9	-17.1	60.9	588.2	631.0	184.9	184.9	9.4	1.000140
23000.0	434.6	-12.1	-18.3	60.3	579.2	629.6	187.6	187.6	7.8	1.000137
23500.0	426.0	-13.4	-18.3	60.9	570.7	628.0	184.2	184.2	7.6	1.000135
24000.0	417.6	-14.1	-19.8	62.3	561.0	627.1	177.9	177.9	8.1	1.000132
24500.0	409.2	-14.8	-21.8	55.4	551.3	626.2	176.8	176.8	8.9	1.000129
25000.0	400.8	-15.9	-23.1	54.3	542.3	624.9	177.3	177.3	9.8	1.000126
25500.0	392.4	-16.9	-24.3	53.2	533.4	623.6	178.7	178.7	9.7	1.000124
26000.0	384.6	-18.0	-25.5	52.1	524.7	622.2	180.3	180.3	9.4	1.000121
26500.0	376.8	-19.0	-26.7	51.0	516.2	620.9	197.3	197.3	8.8	1.000119
27000.0	369.1	-20.1	-28.0	49.9	507.8	619.6	212.1	212.1	8.1	1.000117
27500.0	361.5	-21.1	-29.2	48.7	499.5	618.3	217.1	217.1	7.6	1.000115
28000.0	354.1	-22.2	-30.4	47.6	491.4	617.0	221.2	221.2	7.5	1.000112
28500.0	346.5	-23.2	-31.7	46.5	483.4	615.7	224.1	224.1	7.7	1.000110
29000.0	339.8	-24.3	-32.9	45.4	475.6	614.4	219.0	219.0	8.0	1.000108
29500.0	332.9	-25.4	-34.1	44.3	467.9	613.1	206.8	206.8	8.3	1.000106
30000.0	326.1	-26.4	-35.3	43.2	460.3	611.7	196.8	196.8	8.6	1.000104
30500.0	319.4	-27.5	-36.6	42.1	452.9	610.4	188.2	188.2	8.9	1.000103
31000.0	312.9	-28.5	-37.8	41.0	445.5	609.1	177.0	177.0	8.8	1.000101
31500.0	306.5	-29.6	-39.4	38.4	438.3	607.8	164.5	164.5	8.3	1.000099
32000.0	300.0	-30.5	-47.1	18.2	430.8	606.5	150.6	150.6	7.9	1.000096
32500.0	293.4	-31.8	-50.3	14.3**	423.5	605.0	135.9	135.9	7.5	1.000095
33000.0	286.9	-33.1	-51.8	13.5**	416.3	603.3	128.1	128.1	8.0	1.000093

\*\* AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.00 FEET MSL  
10 JULY 69 0830 HRS MDT  
ASCENSION NO. 612

UPPER AIR DATA  
0031003904  
WHITE SANDS

WSTM SITE COORDINATES  
488580.00 FEET E  
185045.00 FEET N

TABLE X (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND		WIND DATA		INDEX OF REFRACTION
		AIR DEGREES CENTIGRADE	DEWPOINT CENTIGRADE			KNOTS	DEGREES (T.N.)	KNOTS		
33500.0	280.5	-34.4	-53.4	12.8**	409.2	601.7	122.5	8.6	1.000091	
34000.0	274.2	-35.6	-55.0	12.0**	402.3	600.1	126.8	9.4	1.000090	
34500.0	268.1	-36.9	-56.6	11.2**	395.4	598.5	132.0	10.2	1.000088	
35000.0	262.2	-38.2	-58.2	10.4**	388.8	596.8	136.7	10.6	1.000087	
35500.0	256.3	-39.5	-59.9	9.6**	382.2	595.2	142.0	10.8	1.000085	
36000.0	250.6	-40.8	-61.6	8.8**	375.8	593.6	148.8	10.3	1.000084	
36500.0	245.0	-42.1	-63.3	8.0**	369.4	591.9	156.2	9.9	1.000082	
37000.0	239.6	-43.3	-65.1	7.2**	363.2	590.3	164.4	9.7	1.000081	
37500.0	234.2	-44.6	-67.0	6.4**	357.1	588.6	172.2	9.9	1.000080	
38000.0	229.0	-45.9	-68.9	5.6**	351.2	587.0	179.5	10.5	1.000078	
38500.0	223.9	-47.2	-70.9	4.9**	345.3	585.3	179.9	11.3	1.000077	
39000.0	218.9	-48.5	-73.1	4.1**	339.5	583.6	176.0	12.1	1.000076	
39500.0	214.1	-49.8	-75.5	3.3**	333.9	582.0	171.1	13.0	1.000074	
40000.0	209.3	-51.1	-78.2	2.5**	328.3	580.3	165.9	14.0	1.000073	
40500.0	204.6	-52.3	-81.5	1.7**	322.9	578.6	163.6	14.9	1.000072	
41000.0	200.1	-53.6	-86.0	0.9**	317.6	576.9	162.0	15.9	1.000071	
41500.0	195.6	-54.9	-87.7	0.1**	312.3	575.2	163.3	16.4	1.000070	
42000.0	191.0	-56.0	0.	-0. **	306.4	573.7	165.3	16.7	1.000068	
42500.0	186.4	-57.1	0.	-0. **	300.6	572.3	168.3	17.2	1.000067	
43000.0	181.9	-58.2	0.	-0. **	294.8	570.9	171.7	17.8	1.000066	
43500.0	177.5	-59.3	0.	-0. **	289.2	569.4	173.8	18.1	1.000064	
44000.0	173.2	-60.4	0.	-0. **	283.7	568.0	175.4	18.2	1.000063	
44500.0	169.1	-61.4	0.	-0. **	278.3	566.6	177.2	17.7	1.000062	
45000.0	165.0	-62.5	0.	-0. **	273.0	565.1	179.1	16.9	1.000061	
45500.0	161.0	-63.6	0.	-0. **	267.8	563.6	181.9	15.7	1.000060	
46000.0	157.2	-64.7	0.	-0. **	262.7	562.2	185.6	14.2	1.000059	
46500.0	153.4	-65.6	0.	-0. **	257.5	560.9	185.3	12.2	1.000057	
47000.0	149.6	-65.7	0.	-0. **	251.3	560.8	179.7	9.8	1.000056	
47500.0	145.9	-65.8	0.	-0. **	245.2	560.6	172.7	8.1	1.000055	
48000.0	142.3	-65.9	0.	-0. **	239.3	560.5	162.9	7.5	1.000053	

\*\* AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 5585.00 FEET MSL  
10 JULY 65 0830 HRS MDT  
ASCENSION NC. 673

UPPER AIR DATA  
0031003904  
WHITE SANDS

TABLE X (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA		INDEX OF REFRACTION
						DIRECTION DEGREES(TN)	SPEED KNOTS	
48500.0	128.8	-66.1	-0.00	233.5	560.4	152.8	7.3	1.000052
49000.0	125.4	-66.2	-0.00	227.8	560.2	141.4	8.9	1.000051
49500.0	122.0	-66.3	-0.00	222.3	560.1	130.0	10.5	1.000050
50000.0	128.7	-66.9	-0.00	217.4	559.3	129.6	11.1	1.000048
50500.0	125.5	-67.7	-0.00	212.8	558.1	129.1	11.7	1.000047
51000.0	122.5	-68.5	-0.00	208.3	557.0	130.4	12.0	1.000046
51500.0	119.3	-69.3	-0.00	203.9	555.9	132.3	12.2	1.000045
52000.0	116.3	-70.1	-0.00	199.6	554.8	128.9	11.4	1.000044
52500.0	113.4	-70.9	-0.00	195.3	553.7	119.7	9.7	1.000043
53000.0	110.5	-71.8	-0.00	191.2	552.6	109.9	11.7	1.000043
53500.0	107.7	-72.1	-0.00	186.7	552.1	98.5	22.1	1.000042
54000.0	105.0	-71.9	-0.00	181.8	552.4	89.6	30.2	1.000040
54500.0	102.4	-71.6	-0.00	176.9	552.8	94.9	25.4	1.000039
55000.0	99.8	-71.4	-0.00	172.2	553.1	100.2	20.7	1.000038
55500.0	97.3	-71.0	-0.00	167.6	553.6	104.1	22.4	1.000037
56000.0	94.6	-70.6	-0.00	163.2	554.1	108.0	24.2	1.000036
56500.0	92.5	-70.2	-0.00	158.8	554.7	132.9	29.7	1.000035
57000.0	90.2	-69.9	-0.00	154.6	555.2	162.1	14.0	1.000034
57500.0	87.9	-69.5	-0.00	150.4	555.7	157.8	13.1	1.000033
58000.0	85.7	-69.1	-0.00	146.4	556.2	135.1	14.7	1.000033
58500.0	83.6	-68.8	-0.00	142.5	556.7	120.6	14.6	1.000032
59000.0	81.5	-68.4	-0.00	138.7	557.2	118.2	12.2	1.000031
59500.0	79.5	-68.0	-0.00	135.0	557.7	115.3	9.9	1.000030
60000.0	77.5	-67.6	-0.00	131.4	558.2	107.1	10.6	1.000029
60500.0	75.0	-67.3	-0.00	127.9	558.7	98.9	11.2	1.000028
61000.0	73.7	-66.9	-0.00	124.5	559.2	94.0	12.4	1.000028
61500.0	71.9	-66.5	-0.00	121.2	559.7	90.2	13.9	1.000027
62000.0	70.1	-66.1	-0.00	117.9	560.2	87.4	15.9	1.000026
62500.0	68.3	-65.8	-0.00	114.6	560.7	85.9	18.8	1.000026
63000.0	66.6	-65.4	-0.00	111.7	561.2	84.7	21.3	1.000025

\*\* AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3985.00 FEET MSI  
10 JULY 65 0830 HRS MDT  
ASCENSION AG. 673

UPPER AIR DATA  
0031003904  
WHITE SANDS

WSTM SITE COORDINATES  
488580.00FEET E  
185045.00FEET N

TABLE X (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND		WIND DIRECTION DEGREES(TN)	SPEED		INDEX OF REFRACTION
		AIR DEGREES CENTIGRADE	DEWPOINT CENTIGRADE			KNOTS	KNOTS		KNOTS	KNOTS	
63500.0	65.0	-65.0	0.	-0.	108.7	561.7		85.8	21.6		1.000024
64000.0	63.4	-64.6	0.	-0.	105.8	562.4		86.8	21.9		1.000024
64500.0	61.8	-64.0	0.	-0.	103.0	563.1		86.2	21.9		1.000023
65000.0	60.4	-63.4	0.	-0.	100.3	563.9		84.8	21.8		1.000022
65500.0	58.9	-62.5	0.	-0.	97.6	564.6		84.4	21.4		1.000022
66000.0	57.5	-62.3	0.	-0.	95.0	565.4		86.0	20.0		1.000021
66500.0	56.1	-61.7	0.	-0.	92.4	566.2		87.7	18.7		1.000021
67000.0	54.7	-61.2	0.	-0.	90.0	566.9		84.3	18.6		1.000020
67500.0	53.4	-60.6	0.	-0.	87.6	567.7		80.3	18.7		1.000019
68000.0	52.1	-60.0	0.	-0.	85.2	568.4		77.9	19.6		1.000019
68500.0	50.9	-59.5	0.	-0.	83.0	569.2		77.4	21.7		1.000018
69000.0	49.7	-58.9	0.	-0.	80.8	570.0		76.9	23.8		1.000018
69500.0	48.5	-58.3	0.	-0.	78.6	570.7		79.5	26.1		1.000017
70000.0	47.3	-57.8	0.	-0.	76.5	571.5		82.0	28.3		1.000017
70500.0	46.2	-57.2	0.	-0.	74.5	572.2		84.9	29.6		1.000017
71000.0	45.1	-56.9	0.	-0.	72.6	572.6		87.9	30.2		1.000016
71500.0	44.0	-56.6	0.	-0.	70.9	572.9		91.0	30.7		1.000016
72000.0	43.0	-56.4	0.	-0.	69.2	573.3		92.9	29.9		1.000015
72500.0	42.0	-56.2	0.	-0.	67.5	573.6		94.8	29.1		1.000015
73000.0	41.1	-55.9	0.	-0.	65.8	573.9		95.7	28.5		1.000015
73500.0	40.1	-55.7	0.	-0.	64.3	574.2		95.2	28.3		1.000014
74000.0	39.2	-55.4	0.	-0.	62.7	574.6		94.7	28.1		1.000014
74500.0	38.3	-55.2	0.	-0.	61.2	574.9		94.2	28.0		1.000014
75000.0	37.4	-54.9	0.	-0.	59.7	575.2		93.8	28.1		1.000013
75500.0	36.5	-54.7	0.	-0.	58.2	575.5		93.4	28.1		1.000013
76000.0	35.7	-54.4	0.	-0.	56.8	575.9		93.0	28.2		1.000013
76500.0	34.9	-54.2	0.	-0.	55.5	576.2		91.8	28.7		1.000012
77000.0	34.0	-53.9	0.	-0.	54.1	576.5		90.5	29.3		1.000012
77500.0	33.3	-53.7	0.	-0.	52.8	576.8		89.2	29.8		1.000012
78000.0	32.5	-53.4	0.	-0.	51.5	577.2		88.2	30.3		1.000011

\*\* AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3949.00 FEET MSL  
 10 JULY 65 0830 HRS MDT  
 ASCENSION NO. 473

UPPER AIR DATA  
 0001003904  
 WHITE SANDS

WSTM SITE COORDINATES  
 486580.00 FEET E  
 185045.00 FEET N

TABLE X (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES DEWPOINT CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DIRECTION DEGREES (TN)	WIND SPEED KNOTS	INDEX OF REFRACTION
78500.0	31.7	-53.2	-0.	50.3	577.5	87.3	30.7	1.000011
79000.0	31.0	-53.0	-0.	49.1	577.8	86.5	31.1	1.000011
79500.0	30.3	-52.7	-0.	47.9	578.1	85.6	31.6	1.000011
80000.0	29.6	-52.5	-0.	46.7	578.5	85.1	32.3	1.000010
80500.0	28.9	-52.2	-0.	45.6	578.8	84.5	32.9	1.000010
81000.0	28.2	-52.0	-0.	44.5	579.1	83.9	33.6	1.000010
81500.0	27.6	-51.7	-0.	43.4	579.4	84.4	34.5	1.000010
82000.0	26.9	-51.5	-0.	42.3	579.7	85.8	35.6	1.000009
82500.0	26.3	-51.2	-0.	41.3	580.1	87.3	36.6	1.000009
83000.0	25.7	-51.0	-0.	40.3	580.4	88.8	37.7	1.000009
83500.0	25.1	-50.7	-0.	39.3	580.7	90.8	37.6	1.000009
84000.0	24.5	-50.5	-0.	38.6	581.0	92.9	37.5	1.000009
84500.0	24.0	-50.2	-0.	37.5	581.3	95.0	37.4	1.000008
85000.0	23.4	-50.0	-0.	36.6	581.7	97.0	37.1	1.000008
85500.0	22.9	-49.7	-0.	35.7	582.0	98.8	36.7	1.000008
86000.0	22.3	-49.5	-0.	34.8	582.3	100.7	36.3	1.000008
86500.0	21.8	-49.3	-0.	34.0	582.6	102.5	35.7	1.000008
87000.0	21.3	-49.0	-0.	33.1	582.9	102.9	33.5	1.000007
87500.0	20.8	-48.8	-0.	32.3	583.3	103.3	32.7	1.000007
88000.0	20.3	-48.5	-0.	31.6	583.6	103.6	29.0	1.000007
88500.0	19.9	-48.3	-0.	30.8	583.9	101.8	27.3	1.000007
89000.0	19.4	-48.0	-0.	30.0	584.2	99.6	25.7	1.000007
89500.0	19.0	-47.8	-0.	29.3	584.6	97.4	24.0	1.000007
90000.0	18.5	-47.3	-0.	28.6	585.2	95.2	23.5	1.000006
90500.0	18.1	-46.9	-0.	27.9	585.7	93.0	23.8	1.000006
91000.0	17.7	-46.4	-0.	27.2	586.3	90.9	24.1	1.000006
91500.0	17.3	-46.0	-0.	26.6	586.9	89.1	24.8	1.000006
92000.0	16.9	-45.5	-0.	25.9	587.5	88.0	26.4	1.000006
92500.0	16.6	-45.1	-0.	25.3	588.1	86.8	27.9	1.000006
93000.0	16.2	-44.6	-0.	24.7	588.6	85.8	29.5	1.000005

\*\* AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 2019.00 FEET MSL  
10 JULY 65 0830 HRS MDT  
ASCENSION NO. 673

UPPER AIR DATA  
0031003904  
WHITE SANDS

WSN SITE COORDINATES  
485580.00FEET E  
185045.00FEET N

TABLE X (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND		WIND DATA		INDEX OF REFRACTION
		AIR DEGREES CENTIGRADE	DEWPOINT CENTIGRADE			KNOTS	KNOTS	DIRECTION DEGREES(TN)	SPEED KNOTS	
93500.0	15.8	-44.2	0.	-0.	24.1	589.2	30.6	86.9	30.6	1.000005
94000.0	15.5	-43.7	0.	-0.	23.5	589.8	31.7	86.1	31.7	1.000005
94500.0	15.1	-43.3	0.	-0.	22.9	590.4	32.9	89.2	32.9	1.000005
95000.0	14.8	-42.8	0.	-0.	22.4	590.9	33.3	90.3	33.3	1.000005
95500.0	14.5	-42.4	0.	-0.	21.8	591.5	33.5	91.4	33.5	1.000005
96000.0	14.1	-41.9	0.	-0.	21.3	592.1	33.7	92.4	33.7	1.000005
96500.0	13.8	-41.5	0.	-0.	20.8	592.7	34.0	92.8	34.0	1.000005
97000.0	13.5	-41.0	0.	-0.	20.3	593.2	34.6	92.3	34.6	1.000005
97500.0	13.2	-41.1	0.	-0.	19.9	593.1	35.1	91.8	35.1	1.000004
98000.0	12.9	-41.3	0.	-0.	19.4	592.9	35.7	91.2	35.7	1.000004
98500.0	12.6	-41.5	0.	-0.	19.0	592.7	36.8	90.7	36.8	1.000004
99000.0	12.4	-41.6	0.	-0.	18.6	592.5	37.9	90.1	37.9	1.000004
99500.0	12.1	-41.8	0.	-0.	18.2	592.3	39.0	89.6	39.0	1.000004
100000.0	11.8	-41.9	0.	-0.	17.8	592.1	40.5	89.4	40.5	1.000004
100500.0	11.6	-42.1	0.	-0.	17.4	591.9	42.2	89.3	42.2	1.000004
101000.0	11.3	-42.2	0.	-0.	17.1	591.7	43.9	89.2	43.9	1.000004
101500.0	11.1	-42.4	0.	-0.	16.7	591.5	44.9	89.5	44.9	1.000004
102000.0	10.8	-42.5	0.	-0.	16.3	591.3	44.8	90.2	44.8	1.000004
102500.0	10.6	-42.7	0.	-0.	16.0	591.1	44.8	90.9	44.8	1.000004
103000.0	10.3	-42.9	0.	-0.	15.7	590.9				1.000003
103500.0	10.1	-43.0	0.	-0.	15.3	590.7				1.000003
104000.0	9.9	-42.7	0.	-0.	15.0	591.0				1.000003
104500.0	9.7	-42.0	0.	-0.	14.6	592.0				1.000003
105000.0	9.5	-41.2	0.	-0.	14.2	593.0				1.000003
105500.0	9.3	-40.4	0.	-0.	13.9	594.0				1.000003

\*\* AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3589.00 FEET MSL  
 10 JULY 65 0830 HRS MDT  
 ASCENDING NO. 67

MANDATORY LEVELS  
 0031003904  
 WHITE SANDS

WSTM SITE COORDINATES  
 488580.00 FEET E  
 185045.00 FEET N

TABLE XI

PRESSURE GEOPOTENTIAL MILLIBARS	FEET	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT	WIND DATA	
				DIRECTION DEGREES (TN)	SPEED KNOTS
850.0	5067.	18.7	82.	69.0	2.3
800.0	6773.	16.2	79.	127.1	4.0
750.0	8570.	13.1	81.	162.5	8.4
700.0	10468.	9.9	84.	191.3	12.0
650.0	12482.	6.4	86.	199.7	17.1
600.0	14628.	2.7	88.	184.7	19.5
550.0	16927.	-1.2	91.	178.4	21.4
500.0	19406.	-5.8	73.	173.8	15.0
450.0	22095.	-10.2	67.	182.8	10.8
400.0	25041.	-16.0	54.	177.4	9.9
350.0	28300.	-22.8	47.	223.2	7.7
300.0	31952.	-30.5	18.	150.5	7.9
250.0	36112.	-40.9	9.**	151.2	10.1
200.0	40956.	-53.7	1.**	161.9	16.0
175.0	43731.	-59.9	-0.**	174.8	18.2
150.0	46840.	-65.7	-0.**	180.3	10.1
125.0	50465.	-67.8	-0.**	129.0	11.8
100.0	54806.	-71.4	-0.**	99.7	21.1
80.0	59168.	-68.1	-0.**	116.6	10.5
70.0	61812.	-66.1	-0.**	87.4	15.9
60.0	64897.	-63.3	-0.**	84.6	21.8
50.0	68611.	-59.0	-0.**	77.1	23.2
40.0	73246.	-55.6	-0.**	95.2	28.3
30.0	79302.	-52.6	-0.**	85.5	31.7
25.0	83182.	-50.7	-0.**	90.9	37.6
20.0	87978.	-48.3	-0.**	102.5	27.8
15.0	94260.	-43.1	-0.**	89.6	33.2
10.0	103265.	-43.1	-0.**		

\*\* AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3589.00 FEET MSL  
10 JULY 65 1100 HRS MDT  
ASCENSION NO. 674

SIGNIFICANT LEVEL DATA  
0031003905  
WHITE SANDS

WSTM SITE COORDINATES  
488580.00 FEET E  
185045.00 FEET N

TABLE XII

PRESSURE GEOMETRIC ALTITUDE		TEMPERATURE AIR DEWPOINT		REL. HUM. PERCENT
MILLIBARS	MSL FEET	DEGREES	CENTIGRADE	
882.6	3589.0	21.6	16.3	81.0
873.0	4332.6	15.4	15.4	77.0
856.0	4669.1	18.2	16.3	88.0
844.0	5287.8	18.2	14.4	78.0
759.0	8260.5	13.8	11.4	85.0
735.0	9151.4	12.8	7.9	72.0
556.0	14840.4	2.3	1.1	92.0
501.0	19354.5	-5.4	-9.7	72.0
496.0	19653.4	-6.7	-14.7	53.0
440.0	22700.0	-12.2	-19.3	56.0
410.0	24470.8	-14.0	-24.8	40.0
343.0	28849.7	-23.2	-32.4	43.0
291.0	32742.2	-32.0	-49.0	17.0
218.0	39225.0	-48.8	0.	-0. **
179.0	43391.1	-55.4	0.	-0. **
157.0	46064.6	-64.5	0.	-0. **
137.0	48800.6	-65.9	0.	-0. **
119.0	51588.0	-70.6	0.	-0. **
98.0	55365.3	-72.9	0.	-0. **
72.0	61462.9	-64.1	0.	-0. **
65.0	62530.3	-64.1	0.	-0. **
42.0	72578.4	-54.7	0.	-0. **
27.0	81969.6	-51.5	0.	-0. **
9.8	104439.8	-37.1	0.	-0. **
0.4	114231.9	-35.8	0.	-0. **

\*\* RELATIVE HUMIDITY NOT SUPPLIED. ZERO VALUE ASSUMED FOR COMPUTATIONS.



UPPER AIR DATA  
OC31003905  
WHITE SANDS

STATION ALTITUDE 2989.00 FEET MSL  
10 JULY 65 1100 HRS MDT  
ASCENSION NO. 674

WSTM SITE COORDINATES  
488580.00FEET E  
185045.00FEET N

TABLE XIII

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND		WIND DATA		INDEX OF REFRACTION
		AIR DEGREES	DEWPOINT CENTIGRADE			KNCTS	KNCTS	DIRECTION DEGREES(TN)	SPEED KNCTS	
3589.00	883.6	21.6	18.3	81.0	1035.1	671.5	40.0	40.0	1.9	1.000322
4000.00	883.3	21.5	18.2	80.9	1035.0	671.4	40.7	40.7	2.0	1.000321
4500.00	867.9	19.0	15.7	80.3	1026.9	668.2	72.9	72.9	2.3	1.000307
5000.00	852.6	18.2	15.8	85.2	1011.6	667.3	105.2	105.2	2.7	1.000305
5500.00	837.6	17.5	14.2	78.5	995.5	666.7	137.4	137.4	3.1	1.000294
6000.00	822.8	17.1	13.7	75.7	980.5	665.8	169.6	169.6	3.4	1.000289
6500.00	808.2	16.4	13.2	80.5	965.7	664.9	174.2	174.2	5.0	1.000283
7000.00	793.9	15.7	12.7	82.0	951.1	664.0	178.0	178.0	6.5	1.000278
7500.00	779.9	14.9	12.2	83.2	936.8	663.2	179.7	179.7	7.7	1.000273
8000.00	766.1	14.2	11.7	84.4	922.7	662.3	182.3	182.3	8.4	1.000268
8500.00	752.5	13.5	10.5	81.5	908.7	661.4	186.6	186.6	8.3	1.000261
9000.00	739.0	13.0	8.6	74.2	894.8	660.5	189.6	189.6	8.1	1.000251
9500.00	725.6	12.2	7.6	73.2	881.3	659.5	191.4	191.4	7.8	1.000245
10000.00	712.4	11.2	7.0	75.0	868.1	658.4	187.8	187.8	8.2	1.000240
10500.00	699.4	10.3	6.5	76.7	855.2	657.3	182.5	182.5	8.7	1.000236
11000.00	686.6	9.4	5.9	78.5	842.4	656.2	177.1	177.1	10.4	1.000232
11500.00	674.1	8.5	5.3	80.3	829.8	655.1	173.0	173.0	12.3	1.000227
12000.00	661.8	7.5	4.7	82.0	817.4	654.0	172.1	172.1	14.8	1.000223
12500.00	649.7	6.6	4.1	83.8	805.2	652.8	171.6	171.6	16.7	1.000219
13000.00	637.8	5.7	3.5	85.5	793.3	651.7	171.4	171.4	18.1	1.000215
13500.00	626.2	4.8	2.9	87.3	781.4	650.6	172.2	172.2	18.4	1.000211
14000.00	614.7	3.9	2.2	89.0	769.8	649.5	173.4	173.4	18.3	1.000207
14500.00	603.5	2.9	1.6	90.8	758.4	648.4	176.3	176.3	17.7	1.000203
15000.00	592.4	2.0	0.8	91.3	747.0	647.3	179.9	179.9	16.9	1.000199
15500.00	581.2	1.2	-0.4	89.1	735.3	646.2	184.6	184.6	16.1	1.000194
16000.00	570.2	0.3	-1.6	86.9	723.8	645.1	188.2	188.2	15.4	1.000189
16500.00	559.5	-0.5	-2.8	84.7	712.5	644.0	191.4	191.4	14.8	1.000184
17000.00	548.9	-1.4	-4.0	82.5	701.4	643.0	191.3	191.3	13.9	1.000180
17500.00	538.5	-2.2	-5.1	80.3	690.5	641.9	190.0	190.0	12.9	1.000175
18000.00	528.4	-3.0	-6.3	78.1	679.7	640.8	186.0	186.0	13.1	1.000171

STATION ALTITUDE 3989.00 FEET MSI

10 JULY 65

ASCENSION NO. 674

UPPER AIR DATA

0031003905

WHITE SANDS

WSTM SITE COORDINATES

488500.00FEET E

185045.00FEET N

TABLE XXII (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND		WIND DATA		INDEX OF REFRACTION
		AIR DEGREES	DEWPOINT CENTIGRADE			KNOTS	KNOTS	DIRECTION DEGREES(TN)	SPEED KNOTS	
18500.0	518.4	-3.9	-7.5	75.9	669.1	639.8		181.5	13.4	1.000167
19000.0	508.6	-4.7	-8.7	73.7	658.6	638.7		177.5	14.5	1.000163
19500.0	499.0	-5.9	-11.6	64.3	649.3	637.1		174.1	15.6	1.000158
20000.0	489.3	-7.3	-15.3	53.3	640.4	635.3		173.0	16.3	1.000153
20500.0	479.8	-8.2	-16.0	53.8	630.1	634.2		173.0	16.4	1.000150
21000.0	470.4	-9.1	-16.7	54.3	620.0	633.1		174.8	15.3	1.000147
21500.0	461.3	-10.0	-17.5	54.8	610.0	632.0		179.4	14.2	1.000144
22000.0	452.3	-10.9	-18.2	55.3	600.2	630.9		186.1	13.0	1.000142
22500.0	443.5	-11.8	-19.0	55.8	590.6	629.8		191.6	12.0	1.000139
23000.0	434.8	-12.5	-20.1	53.3	580.5	629.0		196.6	11.0	1.000136
23500.0	426.2	-13.0	-21.6	48.8	570.3	628.3		197.8	10.4	1.000133
24000.0	417.8	-13.5	-22.2	44.3	560.2	627.7		198.5	9.6	1.000130
24500.0	409.5	-14.1	-24.8	40.0	550.3	627.0		197.3	8.8	1.000127
25000.0	401.3	-15.1	-25.7	40.4	541.4	625.7		197.8	8.1	1.000125
25500.0	393.2	-16.2	-26.5	40.7	532.7	624.4		200.3	7.5	1.000123
26000.0	385.2	-17.2	-27.4	41.0	524.1	623.1		204.0	7.2	1.000120
26500.0	377.5	-18.3	-28.3	41.4	515.7	621.8		208.8	7.0	1.000118
27000.0	369.9	-19.3	-29.2	41.7	507.4	620.5		208.4	6.7	1.000116
27500.0	362.4	-20.4	-30.0	42.1	499.2	619.2		204.0	6.2	1.000114
28000.0	355.1	-21.4	-30.9	42.4	491.2	617.9		198.0	6.0	1.000112
28500.0	347.9	-22.5	-31.8	42.8	483.3	616.6		191.3	5.9	1.000110
29000.0	340.8	-23.5	-32.0	42.0	475.5	615.3		188.2	6.4	1.000108
29500.0	333.7	-24.7	-34.9	36.7	467.8	613.9		186.0	6.9	1.000106
30000.0	326.7	-25.8	-36.8	35.3	460.1	612.5		187.8	7.6	1.000104
30500.0	319.9	-26.9	-38.6	32.0	452.6	611.1		186.5	8.4	1.000102
31000.0	313.2	-28.1	-40.8	28.6	445.2	609.6		174.0	9.6	1.000100
31500.0	306.7	-29.2	-43.0	25.3	437.9	608.2		162.0	10.7	1.000098
32000.0	300.3	-30.3	-45.3	22.0	430.8	606.8		151.0	11.8	1.000097
32500.0	294.0	-31.5	-47.7	18.6	423.8	605.4		141.6	12.9	1.000095
33000.0	287.7	-32.7	-49.9	16.3**	416.8	603.9		134.5	14.0	1.000093

\*\* AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.00 FEET MSL  
10 JULY 65 1100 HRS MDT  
ASCENSION NO. 674

UPPER AIR DATA  
0031003905  
WHITE SANDS

WSTM SITE COORDINATES  
488580.00FEET E  
185045.00FEET N

TABLE XVII (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA		INDEX OF REFRACTION
		AIR DEGREES CENTIGRADE	DEWPOINT CENTIGRADE				DIRECTION DEGREES(TN)	SPEED KNOTS	
33500.0	261.3	-34.0	-51.7	15.0**	409.8	602.2	131.4	14.2	1.000092
34000.0	275.1	-25.3	-53.6	13.7**	403.0	600.6	132.4	13.2	1.000090
34500.0	269.1	-36.6	-55.5	12.4**	396.2	598.9	134.9	12.6	1.000088
35000.0	263.2	-37.5	-57.4	11.1**	389.6	597.3	138.1	12.1	1.000087
35500.0	257.4	-35.1	-55.5	5.8**	383.2	595.6	143.4	11.9	1.000085
36000.0	251.7	-40.4	-61.0	6.5**	376.8	594.0	148.8	11.8	1.000084
36500.0	246.1	-41.7	-63.9	7.1**	370.6	592.3	149.7	12.4	1.000083
37000.0	240.7	-43.0	-66.4	5.8**	364.5	590.7	150.4	12.9	1.000081
37500.0	235.4	-44.3	-65.2	4.5**	358.5	589.0	150.4	13.1	1.000080
38000.0	230.2	-45.6	-72.5	3.2**	352.6	587.3	150.7	13.2	1.000079
38500.0	225.2	-46.9	-76.9	1.9**	346.8	585.7	152.5	13.3	1.000077
39000.0	220.2	-48.2	-84.8	0.6**	341.1	584.0	154.7	13.3	1.000076
39500.0	215.2	-49.5	0.	-0.0**	335.2	582.3	159.1	12.7	1.000075
40000.0	210.2	-50.8	0.	-0.0**	329.3	580.7	163.2	12.4	1.000073
40500.0	205.2	-52.0	0.	-0.0**	323.4	579.0	166.6	13.0	1.000072
41000.0	200.4	-53.3	0.	-0.0**	317.7	577.3	168.9	13.8	1.000071
41500.0	195.8	-54.6	0.	-0.0**	312.1	575.7	169.6	14.8	1.000069
42000.0	191.2	-55.9	0.	-0.0**	306.5	574.0	169.5	15.9	1.000068
42500.0	186.7	-57.1	0.	-0.0**	301.1	572.3	168.8	17.0	1.000067
43000.0	182.3	-58.4	0.	-0.0**	295.8	570.6	168.9	17.9	1.000066
43500.0	178.0	-59.6	0.	-0.0**	290.5	569.0	170.1	18.5	1.000065
44000.0	173.7	-60.6	0.	-0.0**	284.7	567.7	171.1	18.7	1.000063
44500.0	169.5	-61.5	0.	-0.0**	279.1	566.5	172.0	18.0	1.000062
45000.0	165.4	-62.5	0.	-0.0**	273.6	565.2	173.4	17.3	1.000061
45500.0	161.4	-63.4	0.	-0.0**	268.1	563.9	177.3	16.7	1.000060
46000.0	157.5	-64.4	0.	-0.0**	262.8	562.6	181.1	16.0	1.000059
46500.0	153.6	-64.7	0.	-0.0**	256.8	562.1	181.4	14.9	1.000057
47000.0	149.9	-65.0	0.	-0.0**	250.8	561.8	181.7	13.7	1.000056
47500.0	146.2	-65.2	0.	-0.0**	244.9	561.5	169.6	13.2	1.000055
48000.0	142.6	-65.5	0.	-0.0**	239.2	561.1	154.7	12.8	1.000053

\*\* AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

UPPER AIR DATA  
0031003905  
WHITE SANDS

WSTM SITE COORDINATES  
485580.00FEET E  
185045.00FEET N

STATION ALTITUDE 3985.00 FEET MSL  
10 JULY 65  
ASCENSICA NO. 674

TABLE XIII (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND		WIND DATA		INDEX OF REFRACTION
		AIR DEGREES CENTIGRADE	DEWPOINT CENTIGRADE			KNOTS	KNOTS	DIRECTION DEGREES(TN)	SPEED KNOTS	
40500.0	139.1	-65.7	C.	-0.00	233.6	560.8	146.0	13.3	1.000032	
49000.0	135.6	-66.2	C.	-0.00	228.4	560.1	139.4	13.8	1.000051	
49500.0	132.2	-67.1	C.	-0.00	223.6	559.0	136.1	13.8	1.000050	
50000.0	128.9	-67.9	C.	-0.00	218.9	557.8	133.9	13.5	1.000049	
50500.0	125.7	-68.8	0.	-0.00	214.3	556.7	132.5	12.7	1.000048	
51000.0	122.6	-69.6	0.	-0.00	209.8	555.5	131.5	11.6	1.000047	
51500.0	119.5	-70.5	C.	-0.00	205.5	554.4	130.1	10.7	1.000046	
52000.0	116.5	-70.9	C.	-0.00	200.7	553.8	128.0	10.6	1.000045	
52500.0	113.6	-71.2	C.	-0.00	195.9	553.4	125.8	10.5	1.000044	
53000.0	110.7	-71.5	C.	-0.00	191.2	553.0	126.2	11.3	1.000043	
53500.0	107.9	-71.8	C.	-0.00	186.6	552.6	126.9	12.2	1.000042	
54000.0	105.1	-72.1	C.	-0.00	182.1	552.2	126.8	13.5	1.000041	
54500.0	102.5	-72.4	C.	-0.00	177.8	551.7	125.6	15.5	1.000040	
55000.0	99.9	-72.7	0.	-0.00	173.5	551.3	124.4	17.5	1.000039	
55500.0	97.3	-72.7	C.	-0.00	169.2	551.3	124.6	18.2	1.000038	
56000.0	94.9	-72.0	C.	-0.00	164.4	552.3	125.1	18.8	1.000037	
56500.0	92.5	-71.3	0.	-0.00	159.7	553.3	124.9	19.2	1.000036	
57000.0	90.2	-70.5	C.	-0.00	155.2	554.2	124.0	19.3	1.000035	
57500.0	88.0	-69.8	C.	-0.00	150.7	555.2	123.2	19.5	1.000034	
58000.0	85.8	-69.1	0.	-0.00	146.5	556.2	127.6	17.9	1.000033	
58500.0	83.6	-68.4	0.	-0.00	142.3	557.2	132.0	16.4	1.000032	
59000.0	81.5	-67.7	C.	-0.00	138.3	558.2	127.1	16.1	1.000031	
59500.0	79.5	-66.9	0.	-0.00	134.3	559.2	116.6	16.5	1.000030	
60000.0	77.5	-66.2	C.	-0.00	130.5	560.1	107.1	17.1	1.000029	
60500.0	75.6	-65.5	C.	-0.00	126.8	561.1	101.4	18.6	1.000028	
61000.0	73.7	-64.8	C.	-0.00	123.2	562.1	95.8	20.0	1.000027	
61500.0	71.9	-64.1	0.	-0.00	119.8	563.0	92.5	21.2	1.000027	
62000.0	70.1	-64.1	0.	-0.00	116.9	563.0	90.1	22.2	1.000026	
62500.0	68.4	-64.1	0.	-0.00	114.0	563.0	89.0	23.0	1.000025	
63000.0	66.7	-64.1	0.	-0.00	111.2	563.0	94.4	23.0	1.000025	

\*\* AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.00 FEET MSL  
10 JULY 65 1100 HRS MDT  
ASCENSION NO. 674

UPPER AIR DATA  
0031003905  
WHITE SANDS

WSTM SITE COORDINATES  
488580.00 FEET E  
185045.00 FEET N

TABLE XIII (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND		WIND DIRECTION DEGREES (TN)	SPEED KNOTS	INDEX OF REFRACTION
		AIR DEGREES	DEWPOINT CENTIGRADE			KNOTS	KNOTS			
63500.0	65.1	-64.1	0.	-0.	108.5	563.0		99.7	23.0	1.000024
64000.0	63.5	-63.6	0.	-0.	105.7	563.6		103.7	23.0	1.000024
64500.0	62.0	-63.1	0.	-0.	102.9	564.3		106.5	23.0	1.000023
65000.0	60.5	-62.6	0.	-0.	106.2	565.0		109.2	23.0	1.000022
65500.0	59.1	-62.0	0.	-0.	97.5	565.7		108.6	22.9	1.000022
66000.0	57.7	-61.5	0.	-0.	95.0	566.4		105.1	22.6	1.000021
66500.0	56.3	-61.0	0.	-0.	92.5	567.1		101.7	22.3	1.000021
67000.0	55.0	-60.5	0.	-0.	90.0	567.8		98.2	22.2	1.000020
67500.0	53.6	-60.0	0.	-0.	87.7	568.5		94.7	23.1	1.000020
68000.0	52.4	-59.4	0.	-0.	85.4	569.2		91.1	24.0	1.000019
68500.0	51.1	-58.9	0.	-0.	83.1	569.9		87.6	25.0	1.000019
69000.0	49.9	-58.4	0.	-0.	80.9	570.6		85.4	26.1	1.000018
69500.0	48.7	-57.9	0.	-0.	78.8	571.3		84.2	27.3	1.000018
70000.0	47.5	-57.4	0.	-0.	76.7	572.0		82.9	28.5	1.000017
70500.0	46.4	-56.8	0.	-0.	74.7	572.7		82.0	29.6	1.000017
71000.0	45.3	-56.3	0.	-0.	72.8	573.4		84.4	30.1	1.000016
71500.0	44.2	-55.8	0.	-0.	70.9	574.1		86.9	30.5	1.000016
72000.0	43.2	-55.3	0.	-0.	69.0	574.7		89.3	30.9	1.000015
72500.0	42.1	-54.8	0.	-0.	67.2	575.4		91.1	30.4	1.000015
73000.0	41.1	-54.5	0.	-0.	65.6	575.7		92.6	29.5	1.000015
73500.0	40.2	-54.4	0.	-0.	64.0	575.9		94.1	28.6	1.000014
74000.0	39.3	-54.2	0.	-0.	62.5	576.1		95.3	27.4	1.000014
74500.0	38.3	-54.0	0.	-0.	61.0	576.4		96.3	26.0	1.000014
75000.0	37.5	-53.9	0.	-0.	59.5	576.6		97.2	24.6	1.000013
75500.0	36.6	-53.7	0.	-0.	58.1	576.8		97.4	24.1	1.000013
76000.0	35.7	-53.5	0.	-0.	56.7	577.0		97.2	24.0	1.000013
76500.0	34.9	-53.4	0.	-0.	55.3	577.3		96.9	23.9	1.000012
77000.0	34.1	-53.2	0.	-0.	54.0	577.5		96.1	24.0	1.000012
77500.0	33.3	-53.0	0.	-0.	52.7	577.7		95.2	24.2	1.000012
78000.0	32.5	-52.8	0.	-0.	51.4	577.9		94.2	24.4	1.000011

\*\* AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3985.00 FEET MSL  
 10 JULY 69  
 ASCENSION NO. 674

UPPER AIR DATA  
 0031003005  
 WHITE SANDS

WSTM SITE COORDINATES  
 488580.00 FEET E  
 185045.00 FEET N

TABLE XIII (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR CELSIUS	TEMPERATURE DEWPOINT CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	SPEED KNOTS	INDEX OF REFRACTION
78500.0	31.8	-52.7	0.	-0.	50.2	578.2	92.1	25.3	1.000011
79000.0	31.0	-52.5	0.	-0.	49.0	578.4	89.9	26.3	1.000011
79500.0	30.5	-52.3	0.	-0.	47.8	578.6	87.6	27.2	1.000011
80000.0	29.6	-52.2	0.	-0.	46.7	578.8	86.9	27.4	1.000010
80500.0	28.9	-52.0	0.	-0.	45.6	579.1	86.2	27.5	1.000010
81000.0	28.3	-51.8	0.	-0.	44.5	579.3	85.6	27.7	1.000010
81500.0	27.6	-51.7	0.	-0.	43.4	579.5	85.8	27.9	1.000010
82000.0	27.0	-51.5	0.	-0.	42.4	579.7	85.9	28.1	1.000009
82500.0	26.4	-51.2	0.	-0.	41.4	580.1	86.6	28.4	1.000009
83000.0	25.8	-50.8	0.	-0.	40.4	580.6	89.3	28.7	1.000009
83500.0	25.2	-50.5	0.	-0.	39.4	581.0	92.0	29.0	1.000009
84000.0	24.6	-50.2	0.	-0.	38.5	581.4	94.8	29.2	1.000009
84500.0	24.1	-49.9	0.	-0.	37.6	581.8	97.8	29.1	1.000008
85000.0	23.6	-49.6	0.	-0.	36.7	582.2	100.8	29.0	1.000008
85500.0	23.0	-49.2	0.	-0.	35.8	582.7	102.7	28.9	1.000008
86000.0	22.5	-48.9	0.	-0.	35.0	583.1	101.8	28.7	1.000008
86500.0	22.0	-48.6	0.	-0.	34.2	583.5	100.9	28.6	1.000008
87000.0	21.5	-48.3	0.	-0.	33.3	583.9	99.8	28.7	1.000007
87500.0	21.0	-48.0	0.	-0.	32.6	584.3	98.5	29.3	1.000007
88000.0	20.6	-47.6	0.	-0.	31.8	584.7	97.2	29.9	1.000007
88500.0	20.1	-47.3	0.	-0.	31.0	585.2	94.9	30.8	1.000007
89000.0	19.7	-47.0	0.	-0.	30.3	585.6	91.3	32.2	1.000007
89500.0	19.2	-46.7	0.	-0.	29.6	586.0	87.7	33.5	1.000007
90000.0	18.8	-46.4	0.	-0.	28.9	586.4	85.2	34.5	1.000006
90500.0	18.4	-46.0	0.	-0.	28.2	586.8	83.9	35.1	1.000006
91000.0	18.0	-45.7	0.	-0.	27.5	587.2	82.7	35.7	1.000006
91500.0	17.6	-45.4	0.	-0.	26.9	587.6	81.4	35.6	1.000006
92000.0	17.2	-45.1	0.	-0.	26.2	588.0	79.9	34.9	1.000006
92500.0	16.8	-44.8	0.	-0.	25.6	588.5	78.5	34.3	1.000006
93000.0	16.4	-44.4	0.	-0.	25.0	588.9	80.1	34.1	1.000006

\*\* AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 1984.00 FEET MSL  
 10 JULY 65  
 ASCENSION NO. 674  
 UPPER AIR DATA  
 0031003905  
 WHITE SANDS  
 WSTM SITE COORDINATES  
 486580.00FEET E  
 185045.00FEET N

TABLE XIII (Cont)

GEOGRAPHIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	SPEED KNOTS	INDEX OF REFRACTION
93500.0	16.1	-44.1	-0.0	24.4	589.3	84.3	34.3	1.000005
94000.0	15.7	-43.8	-0.0	23.8	589.7	88.4	34.5	1.000005
94500.0	15.3	-43.5	-0.0	23.3	590.1	92.4	34.4	1.000005
95000.0	15.0	-43.1	-0.0	22.7	590.5	96.3	34.0	1.000005
95500.0	14.7	-42.8	-0.0	22.2	590.9	100.2	33.6	1.000005
96000.0	14.3	-42.5	-0.0	21.7	591.3	102.5	34.3	1.000005
96500.0	14.0	-42.2	-0.0	21.1	591.8	103.9	35.5	1.000005
97000.0	13.7	-41.9	-0.0	20.6	592.2	105.3	36.7	1.000005
97500.0	13.4	-41.5	-0.0	20.2	592.6	104.5	36.3	1.000004
98000.0	13.1	-41.2	-0.0	19.7	593.0	103.0	35.2	1.000004
98500.0	12.8	-40.9	-0.0	19.2	593.4	101.5	34.2	1.000004
99000.0	12.5	-40.6	-0.0	18.8	593.8	100.4	34.2	1.000004
99500.0	12.2	-40.3	-0.0	18.3	594.2	100.0	35.0	1.000004
100000.0	12.0	-39.9	-0.0	17.9	594.6	99.7	37.5	1.000004
100500.0	11.7	-39.6	-0.0	17.5	595.0	99.3	39.2	1.000004
101000.0	11.4	-39.3	-0.0	17.1	595.4	98.8	40.4	1.000004
101500.0	11.2	-39.0	-0.0	16.6	595.8	98.1	41.3	1.000004
102000.0	10.9	-38.7	-0.0	16.3	596.3	97.4	42.3	1.000004
102500.0	10.7	-38.3	-0.0	15.9	596.7	96.7	43.2	1.000004
103000.0	10.5	-38.0	-0.0	15.5	597.1	96.5	43.3	1.000003
103500.0	10.2	-37.7	-0.0	15.1	597.5	96.6	43.1	1.000003
104000.0	10.0	-37.4	-0.0	14.8	597.9	96.6	42.9	1.000003
104500.0	9.8	-37.1	-0.0	14.4	598.2	96.6	42.7	1.000003
105000.0	9.6	-37.0	-0.0	14.1	598.3	95.9	41.6	1.000003
105500.0	9.4	-37.0	-0.0	13.8	598.4	95.1	40.2	1.000003
106000.0	9.2	-36.9	-0.0	13.5	598.5	94.3	38.8	1.000003
106500.0	9.0	-36.8	-0.0	13.2	598.6	93.4	37.5	1.000003
107000.0	8.8	-36.8	-0.0	12.9	598.7	93.5	35.7	1.000003
107500.0	8.6	-36.7	-0.0	12.6	598.8	93.9	33.8	1.000003
108000.0	8.4	-36.6	-0.0	12.4	598.8	94.2	31.9	1.000003

\*\* AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

UPPER AIR DATA  
0031003905  
WHITE SANDS  
WSTA SITE COORDINATES  
408580.00FEET E  
185045.00FEET N

STATION ALTITUDE 3909.00 FEET MSL  
10 JULY 65  
ASCENSICA NO. 674  
1100 HRS MDT

TABLE XIII (Cont)

GEOMETRIC ALTITUDE		PRESSURE		TEMPERATURE		REL. HUM. PERCENT	DENSITY CM/CUBIC METER	SPEED OF SOUND		WIND DATA		INDEX OF REFRACTION
MSL FEET		MILLIBARS	DEGREES	AIR DEWPOINT CENTIGRADE				KNOTS		DIRECTION DEGREES (TN)	SPEED KNOTS	
108500.0	8.2	-36.6	0.	0.	-0.	**	12.1	598.9	94.5	94.5	30.0	1.0000003
109000.0	8.0	-36.5	0.	0.	-0.	**	11.8	599.0	95.1	95.1	30.5	1.0000003
109500.0	7.9	-36.4	0.	0.	-0.	**	11.6	599.1	95.7	95.7	31.6	1.0000003
110000.0	7.7	-36.4	0.	0.	-0.	**	11.3	599.2	96.3	96.3	32.8	1.0000003
110500.0	7.5	-36.3	0.	0.	-0.	**	11.1	599.3	97.0	97.0	33.9	1.0000002
111000.0	7.4	-36.2	0.	0.	-0.	**	10.8	599.3				1.0000002
111500.0	7.2	-36.2	0.	0.	-0.	**	10.6	599.4				1.0000002
112000.0	7.1	-36.1	0.	0.	-0.	**	10.4	599.5				1.0000002
112500.0	6.9	-36.0	0.	0.	-0.	**	10.1	599.6				1.0000002
113000.0	6.8	-36.0	0.	0.	-0.	**	9.9	599.7				1.0000002
113500.0	6.6	-35.9	0.	0.	-0.	**	9.7	599.8				1.0000002
114000.0	6.5	-35.8	0.	0.	-0.	**	9.5	599.8				1.0000002

\*\* AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.



STATION ALTITUDE 3989.00 FEET MSL  
 10 JULY 65 1100 HRS MDT  
 ASCENSION NO. 674

MANDATORY LEVELS  
 OC31003905  
 WHITE SANDS

TABLE XIV

PRESSURE GEOPOTENTIAL		TEMPERATURE		REL. HUM. PERCENT	WIND DATA	
MILLIBARS	FEET	AIR DEGREES	DEWPOINT CENTIGRADE		DIRECTION DEGREES (TN)	SPEED KNOTS
850.0	5066.	18.2	15.4	83.	110.8	2.8
800.0	6790.	16.0	12.9	82.	176.8	6.0
750.0	8587.	13.4	10.2	80.	187.4	8.2
700.0	10488.	10.4	6.5	77.	182.6	8.7
650.0	12304.	6.6	4.1	84.	171.6	16.8
600.0	14651.	2.6	1.4	91.	177.2	17.4
550.0	16949.	-1.3	-3.8	83.	191.4	14.0
500.0	19427.	-5.7	-10.6	68.	174.2	15.5
450.0	22108.	-11.2	-18.4	55.	187.9	12.7
400.0	25053.	-15.3	-25.8	40.	198.2	8.0
350.0	28320.	-22.2	-31.6	43.	193.2	6.0
300.0	31979.	-30.4	-45.4	22.	150.4	11.9
250.0	36142.	-40.8	-62.3	8.**	149.1	12.0
200.0	40987.	-53.4	0.	-0.**	169.0	13.9
175.0	43760.	-60.3	0.	-0.**	170.9	18.9
150.0	46872.	-65.0	0.	-0.**	181.7	13.7
125.0	50494.	-69.0	0.	-0.**	132.2	12.4
100.0	54824.	-72.7	0.	-0.**	124.5	17.4
80.0	59175.	-67.1	0.	-0.**	119.9	16.4
70.0	61842.	-64.1	0.	-0.**	90.0	22.2
60.0	64946.	-62.4	0.	-0.**	110.1	23.0
50.0	68673.	-58.5	0.	-0.**	85.7	25.8
40.0	71327.	-54.3	0.	-0.**	94.4	28.4
30.0	79405.	-52.3	0.	-0.**	87.3	27.3
25.0	83289.	-50.4	0.	-0.**	92.7	29.1
20.0	88099.	-47.2	0.	-0.**	95.1	30.7
15.0	94401.	-43.1	0.	-0.**	95.0	34.1
10.0	103475.	-37.4	0.	-0.**	96.6	42.9
7.0	111582.	-36.1	0.	-0.**		

\*\* AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.00 FEET MSL  
10 JULY 69 1315 HRS MDT  
ASCENSION NO. 675

SIGNIFICANT LEVEL DATA

0032003901  
WHITE SANDS

WSTM SITE COORDINATES  
488580.00FEET E  
185045.00FEET N

TABLE XV

PRESSURE GEOMETRIC ALTITUDE MILLIBARS MSL FEET	TEMPERATURE AIR DEWPOINT DEGREES CENTIGRADE		REL. HUM. PERCENT
882.6	23.0	17.1	69.0
862.0	21.2	15.2	68.0
742.0	14.4	6.5	59.0
683.0	9.0	5.2	77.0
655.0	7.9	3.0	71.0
574.0	0.2	-2.2	84.0
519.0	-3.4	-6.1	82.0
484.0	-6.1	-13.7	55.0
424.0	-12.9	-17.6	68.0
404.0	-14.1	-24.6	41.0
289.0	-32.8	-44.0	32.0
276.0	-34.4	-50.5	18.0
197.0	-54.2	0.	-0. **
165.0	-62.4	0.	-0. **
138.0	-68.7	0.	-0. **
110.0	-72.1	0.	-0. **
100.0	-70.8	0.	-0. **
78.0	-64.4	0.	-0. **
68.0	-65.1	0.	-0. **
23.0	-47.0	0.	-0. **
20.0	-49.8	0.	-0. **
17.5	-45.6	0.	-0. **

\*\* RELATIVE HUMIDITY NOT SUPPLIED. ZERO VALUE ASSUMED FOR COMPUTATIONS.

STATION ALTITUDE 3989.00 FEET MSL  
10 JULY 69  
ASCENSION NO. 675

UPPER AIR DATA  
0032003001  
WHITE SANDS

WSTM SITE COORDINATES  
488580.00FEET E  
185045.00FEET N

TABLE XVI

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	TEMPERATURE DEWPOINT CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND M/NOTS	DIRECTION DEGREES(T)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
3080.0	882.6	23.0	17.1	69.0	1029.7	672.9	30.0	1.9	1.000313
4000.0	882.3	23.0	17.1	69.0	1029.5	672.8	30.2	1.9	1.000313
4500.0	867.0	21.6	15.6	68.2	1016.8	671.1	37.9	1.7	1.000304
5000.0	851.8	20.7	14.5	67.3	1002.8	669.9	45.6	1.5	1.000296
5500.0	836.8	19.9	13.5	66.2	988.2	668.8	53.3	1.3	1.000288
6000.0	822.1	19.0	12.4	65.2	973.8	667.8	61.0	1.0	1.000281
6500.0	807.6	18.2	11.4	64.1	959.6	666.8	77.8	1.2	1.000274
7000.0	793.4	17.4	10.4	63.0	945.6	665.8	98.8	1.6	1.000267
7500.0	779.4	16.6	9.4	62.0	931.8	664.7	111.9	2.4	1.000261
8000.0	765.7	15.8	8.4	60.9	918.2	663.7	125.3	3.4	1.000254
8500.0	752.2	15.0	7.3	59.8	904.8	662.7	143.7	4.9	1.000248
9000.0	738.9	14.1	6.5	59.9	891.8	661.6	159.5	6.3	1.000243
9500.0	725.6	12.9	6.3	63.8	879.3	660.2	170.1	7.7	1.000240
10000.0	712.6	11.8	6.1	67.8	867.1	658.9	178.6	9.5	1.000237
10500.0	699.8	10.6	5.7	71.7	855.0	657.5	184.6	11.8	1.000234
11000.0	687.2	9.4	5.4	75.7	843.2	656.1	188.9	14.4	1.000230
11500.0	674.7	8.7	4.6	75.2	830.2	655.2	192.0	17.4	1.000225
12000.0	662.4	8.2	3.6	72.6	816.7	654.6	192.3	19.3	1.000220
12500.0	650.3	7.5	2.7	71.7	803.9	653.7	191.0	20.7	1.000215
13000.0	638.3	6.4	2.0	73.5	792.2	652.4	188.5	21.5	1.000211
13500.0	626.5	5.3	1.3	75.4	780.7	651.1	185.8	22.2	1.000207
14000.0	614.9	4.2	0.6	77.2	769.4	649.8	181.5	20.9	1.000203
14500.0	603.5	3.1	-0.1	79.1	758.2	648.4	177.7	19.9	1.000199
15000.0	592.3	2.0	-0.9	80.9	747.2	647.1	175.5	19.5	1.000195
15500.0	581.4	0.9	-1.7	82.7	736.4	645.8	174.9	18.6	1.000191
16000.0	570.6	-0.0	-2.4	83.9	725.4	644.6	176.4	17.3	1.000188
16500.0	559.8	-0.7	-3.2	83.5	713.5	643.8	179.6	16.0	1.000184
17000.0	549.2	-1.4	-3.9	83.1	701.9	642.9	184.2	14.8	1.000180
17500.0	538.8	-2.1	-4.6	82.7	690.4	642.1	188.0	13.7	1.000176
18000.0	528.7	-2.7	-5.4	82.4	679.2	641.2	191.6	12.6	1.000173

STATION ALTITUDE 3989.00 FEET MSL  
10 JULY 69 1315 HRS MDT  
ASCENSION NO. 675

UPPER AIR DATA  
0032003901  
WHITE SANDS

WSTM SITE COORDINATES  
488580.00 FEET E  
485045.00 FEET N

TABLE XVI (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND		WIND DATA		INDEX OF REFRACTION
		AIR DEGREES	DEWPOINT CENTIGRADE			KNOTS	KNOTS	DIRECTION DEGREES(TN)	SPEED KNOTS	
18500.0	518.7	-3.4	-6.1	81.8	668.1	640.4	191.7	12.5	1.000169	
19000.0	508.8	-4.2	-8.1	74.3	657.4	639.4	191.1	12.5	1.000164	
19500.0	499.0	-4.9	-10.2	66.8	646.8	638.4	189.7	12.4	1.000159	
20000.0	489.5	-5.7	-12.4	59.4	636.4	637.4	181.2	12.4	1.000154	
20500.0	480.1	-6.5	-13.9	55.8	626.3	636.3	179.5	12.2	1.000151	
21000.0	470.7	-7.5	-14.5	57.7	616.5	635.1	180.2	12.0	1.000148	
21500.0	461.6	-8.5	-15.0	59.7	606.5	633.9	183.1	11.6	1.000146	
22000.0	452.6	-9.5	-15.6	61.6	597.3	632.7	189.0	11.3	1.000143	
22500.0	443.8	-10.6	-16.2	63.5	587.9	631.4	195.8	11.0	1.000140	
23000.0	435.1	-11.6	-16.9	65.5	578.7	630.2	203.7	10.3	1.000138	
23500.0	426.7	-12.6	-17.4	67.4	569.7	629.0	211.7	9.6	1.000136	
24000.0	418.3	-13.2	-19.4	60.4	560.0	628.1	213.0	8.4	1.000132	
24500.0	410.0	-13.7	-22.2	49.2	550.1	627.4	213.9	7.2	1.000128	
25000.0	401.8	-14.4	-24.9	40.9	540.6	626.6	208.1	6.6	1.000125	
25500.0	393.5	-15.6	-26.1	40.3	531.9	625.2	201.7	6.0	1.000123	
26000.0	385.5	-16.7	-27.3	39.7	523.4	623.7	189.4	6.1	1.000120	
26500.0	377.5	-17.9	-28.5	39.2	515.0	622.3	178.3	6.3	1.000118	
27000.0	369.8	-19.0	-29.7	38.6	506.7	620.9	172.6	6.5	1.000116	
27500.0	362.2	-20.2	-30.9	38.1	498.6	619.4	166.3	6.6	1.000114	
28000.0	354.7	-21.4	-32.2	37.5	490.6	618.0	158.8	6.4	1.000112	
28500.0	347.4	-22.5	-33.4	36.9	482.8	616.6	153.9	6.5	1.000110	
29000.0	340.3	-23.7	-34.6	36.4	475.1	615.1	152.6	7.0	1.000108	
29500.0	333.3	-24.8	-35.8	35.8	467.5	613.7	153.2	7.7	1.000106	
30000.0	326.4	-26.0	-37.0	35.3	460.1	612.2	155.8	8.6	1.000104	
30500.0	319.7	-27.2	-39.2	34.7	452.7	610.8	159.0	9.8	1.000102	
31000.0	313.2	-28.3	-39.4	34.2	445.5	609.3	162.9	11.3	1.000100	
31500.0	306.7	-29.5	-40.6	33.6	438.5	607.9	164.6	12.4	1.000099	
32000.0	300.4	-30.6	-41.8	33.0	431.5	606.4	164.0	13.0	1.000097	
32500.0	294.2	-31.8	-43.0	32.5	424.7	605.0	163.8	13.3	1.000095	
33000.0	288.2	-32.9	-44.4	31.1	417.8	603.6	164.3	13.3	1.000094	

STATION ALTITUDE 3089.00 FEET MSL  
10 JULY 49 1315 HRS MDT  
ASCENSION NO. 675

UPPER AIR DATA  
0032003001  
WHITE SANDS

TABLE XVI (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND		WIND DIRECTION DEGREES(TN)	WIND DATA		INDEX OF REFRACTION
		AIR DEGREES CENTIGRADE	DEWPOINT CENTIGRADE			KNOTS	KNOTS		SPEED KNOTS		
33500.0	282.0	-33.7	-47.2	24.5	410.2	602.6	134.5	154.5	13.4	1.0000092	
34000.0	276.0	-34.4	-50.6	18.0**	402.7	601.7	163.9	163.9	13.0	1.0000090	
34500.0	269.8	-35.7	-52.3	16.8**	395.9	600.0	163.2	163.2	14.2	1.0000090	
35000.0	263.7	-37.1	-54.0	15.6**	389.2	598.3	161.7	161.7	14.9	1.0000087	
35500.0	257.8	-38.4	-55.8	14.4**	382.6	596.6	160.1	160.1	15.6	1.0000085	
36000.0	252.0	-39.7	-57.6	13.2**	376.2	594.9	157.4	157.4	15.6	1.0000084	
36500.0	246.4	-41.1	-59.5	11.9**	369.9	593.2	154.7	154.7	15.5	1.0000083	
37000.0	240.9	-42.4	-61.4	10.7**	363.7	591.5	151.5	151.5	14.7	1.0000081	
37500.0	235.5	-43.7	-63.4	9.5**	357.6	589.8	149.2	149.2	14.0	1.0000080	
38000.0	230.2	-45.1	-65.5	8.3**	351.6	588.1	151.5	151.5	14.0	1.0000078	
38500.0	225.1	-46.4	-67.6	7.1**	345.8	586.4	153.9	153.9	14.0	1.0000077	
39000.0	220.0	-47.7	-70.0	5.9**	340.0	584.6	157.6	157.6	14.3	1.0000076	
39500.0	215.1	-49.0	-72.6	4.7**	334.4	582.9	161.4	161.4	14.6	1.0000074	
40000.0	210.3	-50.4	-75.5	3.5**	328.8	581.2	164.7	164.7	14.7	1.0000073	
40500.0	205.6	-51.7	-79.2	2.3**	323.4	579.4	168.0	168.0	14.8	1.0000072	
41000.0	201.0	-53.0	-84.7	1.1**	318.1	577.7	170.8	170.8	14.7	1.0000071	
41500.0	196.4	-54.3	0.	-0.6**	312.8	576.0	172.9	172.9	14.4	1.0000070	
42000.0	191.7	-55.5	0.	-0.6**	306.9	574.5	175.1	175.1	14.0	1.0000068	
42500.0	187.2	-56.6	0.	-0.6**	301.1	573.0	176.9	176.9	14.1	1.0000067	
43000.0	182.7	-57.7	0.	-0.6**	295.4	571.6	178.0	178.0	14.1	1.0000066	
43500.0	178.4	-58.8	0.	-0.6**	289.8	570.1	180.7	180.7	14.3	1.0000065	
44000.0	174.1	-59.9	0.	-0.6**	284.5	568.6	182.6	182.6	14.5	1.0000063	
44500.0	170.0	-61.0	0.	-0.6**	279.2	567.1	185.2	185.2	14.5	1.0000062	
45000.0	165.9	-62.1	0.	-0.6**	274.0	565.6	189.2	189.2	14.5	1.0000061	
45500.0	161.9	-63.1	0.	-0.6**	268.6	564.4	193.3	193.3	14.1	1.0000060	
46000.0	157.0	-64.0	0.	-0.6**	262.9	563.2	198.4	198.4	14.1	1.0000059	
46500.0	154.0	-64.8	0.	-0.6**	257.5	562.0	203.5	203.5	14.2	1.0000057	
47000.0	150.2	-65.7	0.	-0.6**	252.3	560.8	206.9	206.9	14.0	1.0000056	
47500.0	146.5	-66.6	0.	-0.6**	247.1	559.6	210.2	210.2	14.4	1.0000055	
48000.0	142.9	-67.5	0.	-0.6**	242.0	558.4	206.2	206.2	14.0	1.0000054	

\*\* AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.00 FEET MSL.  
 10 JULY 69  
 ASCENSION NO. 676

UPPER AIR DATA  
 0032003901  
 WHITE SANDS

WSTN SITE COORDINATES  
 485500.000EPT 2  
 183045.000EPT N

TABLE XVI (CONT)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES (TN)	SPED. KNOTS	INDEX OF REFRACTION
48500.0	139.4	-68.4	0.	237.1	557.2	201.5	10.6	1.000053
49000.0	135.9	-68.9	0.	231.0	556.4	190.9	10.5	1.000052
49500.0	132.4	-69.3	0.	226.4	555.9	178.2	10.5	1.000050
50000.0	129.1	-69.7	0.	221.1	555.4	166.5	10.9	1.000047
50500.0	125.9	-70.1	0.	216.9	554.9	156.9	11.9	1.000048
51000.0	122.7	-70.5	0.	210.9	554.4	147.3	12.9	1.000047
51500.0	119.6	-70.8	0.	206.0	553.0	136.3	14.8	1.000046
52000.0	116.6	-71.2	0.	201.1	553.3	124.8	15.3	1.000045
52500.0	113.6	-71.5	0.	196.4	552.8	115.0	16.8	1.000044
53000.0	110.8	-72.0	0.	191.9	552.5	111.3	19.0	1.000043
53500.0	108.0	-71.8	0.	186.9	552.9	107.5	21.2	1.000040
54000.0	105.2	-71.5	0.	181.0	553.9	109.0	21.8	1.000039
54500.0	102.6	-71.1	0.	176.9	553.4	114.1	21.9	1.000038
55000.0	100.0	-70.8	0.	172.1	553.9	118.0	21.6	1.000038
55500.0	97.5	-70.1	0.	167.3	554.0	125.0	21.0	1.000037
56000.0	95.1	-69.5	0.	162.6	555.7	131.2	20.3	1.000036
56500.0	92.7	-68.8	0.	158.1	556.6	137.1	19.3	1.000035
57000.0	90.4	-68.2	0.	153.7	557.4	143.6	18.2	1.000034
57500.0	88.1	-67.5	0.	149.4	558.3	148.0	17.0	1.000033
58000.0	86.0	-66.9	0.	145.2	559.2	147.5	15.3	1.000032
58500.0	83.8	-66.3	0.	141.1	560.1	140.1	13.2	1.000031
59000.0	81.7	-65.6	0.	137.2	561.0	132.8	11.0	1.000031
59500.0	79.7	-65.0	0.	133.4	561.8	123.1	10.7	1.000030
60000.0	77.7	-64.4	0.	129.7	562.6	107.6	11.2	1.000029
60500.0	75.8	-64.5	0.	126.6	562.4	95.0	11.8	1.000028
61000.0	74.0	-64.7	0.	123.6	562.2	87.2	13.2	1.000028
61500.0	72.1	-64.8	0.	120.6	562.0	79.4	14.5	1.000027
62000.0	70.4	-64.9	0.	117.8	561.9	82.2	15.0	1.000026
62500.0	68.7	-65.1	0.	114.7	561.7	90.5	15.1	1.000026
63000.0	67.0	-64.9	0.	112.1	562.0	98.6	15.2	1.000025

\*\* AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3085.00 FEET MSI  
10 JULY 59 1315 HRS MDT  
ASCENSION NO. 675

UPPER AIR DATA  
0032001001  
WHITE SANDS

TABLE XVI (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS		WIND DATA		INDEX OF REFRACTION
		AIR DEGREES CENTIGRADE	DEWPOINT CENTIGRADE			DIRECTION DEGREES (TN)	SPEED KNOTS			
63500.0	65.4	-64.5	0.	-0.	109.2	562.5	104.8	15.4	1.000024	
64000.0	63.9	-64.1	0.	-0.	106.8	563.0	111.0	15.7	1.000024	
64500.0	62.4	-63.7	0.	-0.	103.8	563.6	114.9	16.1	1.000023	
65000.0	60.9	-63.3	0.	-0.	101.1	564.1	115.0	17.1	1.000023	
65500.0	59.5	-62.9	0.	-0.	98.6	564.6	115.1	18.0	1.000022	
66000.0	58.1	-62.5	0.	-0.	96.1	565.2	111.7	19.2	1.000021	
66500.0	56.7	-62.1	0.	-0.	93.6	565.7	105.1	20.9	1.000021	
67000.0	55.4	-61.7	0.	-0.	91.3	566.2	98.9	22.5	1.000020	
67500.0	54.1	-61.3	0.	-0.	88.9	566.8	95.3	23.4	1.000020	
68000.0	52.8	-60.9	0.	-0.	86.7	567.3	93.5	24.1	1.000019	
68500.0	51.6	-60.5	0.	-0.	84.8	567.8	91.8	24.7	1.000019	
69000.0	50.4	-60.1	0.	-0.	82.3	568.4	92.6	25.1	1.000018	
69500.0	49.2	-59.7	0.	-0.	80.3	568.9	94.0	25.4	1.000018	
70000.0	48.0	-59.3	0.	-0.	78.2	569.4	95.3	25.7	1.000017	
70500.0	46.9	-58.9	0.	-0.	76.2	570.0	98.1	25.3	1.000017	
71000.0	45.8	-58.5	0.	-0.	74.3	570.5	101.1	24.7	1.000017	
71500.0	44.7	-58.1	0.	-0.	72.4	571.0	104.1	24.2	1.000016	
72000.0	43.7	-57.7	0.	-0.	70.6	571.5	104.7	24.2	1.000016	
72500.0	42.6	-57.3	0.	-0.	68.8	572.1	103.7	24.6	1.000015	
73000.0	41.6	-56.9	0.	-0.	67.1	572.6	102.6	25.0	1.000015	
73500.0	40.6	-56.5	0.	-0.	65.4	573.1	101.3	25.2	1.000015	
74000.0	39.7	-56.1	0.	-0.	63.7	573.6	99.0	25.0	1.000014	
74500.0	38.8	-55.7	0.	-0.	62.1	574.2	96.6	24.7	1.000014	
75000.0	37.8	-55.3	0.	-0.	60.5	574.7	94.2	24.4	1.000013	
75500.0	36.9	-54.9	0.	-0.	59.0	575.2	91.2	24.4	1.000013	
76000.0	36.1	-54.5	0.	-0.	57.5	575.7	88.1	24.5	1.000013	
76500.0	35.2	-54.1	0.	-0.	56.0	576.3	85.0	24.6	1.000012	
77000.0	34.4	-53.7	0.	-0.	54.6	576.8	82.2	24.7	1.000012	
77500.0	33.6	-53.3	0.	-0.	53.2	577.3	80.3	25.0	1.000012	
78000.0	32.8	-52.9	0.	-0.	51.9	577.8	78.3	25.3	1.000012	

\*\* AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.00 FEET MSL  
10 JULY 49 1315 HRS MDT  
ASCENSION NO. 675

UPPER AIR DATA  
0032003901  
WHITE SANDS

WSTM SITE COORDINATES  
488580.00FEET E  
185045.00FEET N

TABLE XVI (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA		INDEX OF REFRACTION
		AIR DEGREES	DEWPOINT CENTIGRADE				DIRECTION DEGREES(TN)	SPEED KNOTS	
78500.0	32.0	-52.5	0.	-0.	50.8	578.4	76.3	25.8	1.000011
79000.0	31.3	-52.1	0.	-0.	49.3	578.9	77.2	26.5	1.000011
79500.0	30.5	-51.7	0.	-0.	48.1	579.4	78.3	27.5	1.000011
80000.0	29.8	-51.3	0.	-0.	46.8	579.9	79.4	28.5	1.000010
80500.0	29.1	-50.9	0.	-0.	45.7	580.4	81.2	29.4	1.000010
81000.0	28.4	-50.5	0.	-0.	44.5	581.0	83.5	30.3	1.000010
81500.0	27.8	-50.1	0.	-0.	43.4	581.5	85.9	31.1	1.000010
82000.0	27.1	-49.7	0.	-0.	42.3	582.0	88.5	31.7	1.000009
82500.0	26.5	-49.3	0.	-0.	41.2	582.5	91.6	31.3	1.000009
83000.0	25.8	-48.9	0.	-0.	40.2	583.0	94.8	30.9	1.000009
83500.0	25.2	-48.6	0.	-0.	39.2	583.5	97.9	30.4	1.000009
84000.0	24.6	-48.2	0.	-0.	38.2	584.1	101.1	29.6	1.000008
84500.0	24.1	-47.8	0.	-0.	37.2	584.6	104.2	28.6	1.000008
85000.0	23.5	-47.4	0.	-0.	36.3	585.1	107.3	27.7	1.000008
85500.0	22.9	-47.0	0.	-0.	35.4	585.5	109.2	26.7	1.000008
86000.0	22.4	-47.5	0.	-0.	34.6	584.9	109.9	25.6	1.000008
86500.0	21.9	-48.0	0.	-0.	33.9	584.3	110.7	24.6	1.000008
87000.0	21.4	-48.4	0.	-0.	33.2	583.7	111.2	23.7	1.000007
87500.0	20.9	-48.9	0.	-0.	32.5	583.1	110.4	24.0	1.000007
88000.0	20.5	-49.3	0.	-0.	31.9	582.5	109.6	24.4	1.000007
88500.0	20.0	-49.8	0.	-0.	31.2	581.9	108.8	24.7	1.000007
89000.0	19.5	-49.1	0.	-0.	30.4	582.9			1.000007
89500.0	19.1	-48.4	0.	-0.	29.6	583.8			1.000007
90000.0	18.7	-47.6	0.	-0.	28.8	584.7			1.000006
90500.0	18.2	-46.9	0.	-0.	28.1	585.7			1.000006
91000.0	17.8	-46.2	0.	-0.	27.4	586.6			1.000006

\*\* AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.



STATION ALTITUDE 2689.00 FEET MSL  
10 JULY 49  
ASCENSION NO. 675

MANDATORY LEVELS  
0032003901  
WHITE SANDS

TABLE XVII.

PRESSURE GEOPOTENTIAL		TEMPERATURE		REL. HUM.		WIND DATA	
MILLIBARS	FEET	AIR DEGREES	DEWPOINT CENTIGRADE	PERCENT		DIRECTION DEGREES (TN)	SPEED KNOTS
850.0	5063.	20.6	14.4	67.		46.6	1.5
800.0	6777.	17.8	10.9	64.		89.6	1.4
750.0	8583.	14.9	7.2	60.		146.8	5.1
700.0	10489.	10.6	5.7	72.		184.5	11.8
650.0	12506.	7.5	2.7	72.		190.9	20.8
600.0	14655.	2.8	-0.4	80.		177.0	19.7
550.0	16951.	-1.3	-3.8	83.		183.9	14.9
500.0	19432.	-4.8	-10.0	68.		186.3	12.5
450.0	22129.	-9.8	-15.8	62.		191.1	11.2
400.0	25083.	-14.7	-25.2	41.		206.8	6.4
350.0	28355.	-22.1	-32.9	37.		154.2	6.4
300.0	32011.	-30.7	-41.9	33.		163.9	13.1
250.0	36180.	-40.2	-58.3	13.**		156.1	15.6
200.0	41035.	-53.3	-86.4	1.**		171.3	14.6
175.0	43614.	-59.7	0.	-0.**		182.2	14.4
150.0	46928.	-65.8	0.	-0.**		207.1	12.7
125.0	50515.	-70.2	0.	-0.**		154.3	12.1
100.0	54844.	-70.8	0.	-0.**		118.7	21.8
80.0	59245.	-65.1	0.	-0.**		123.4	10.6
70.0	61920.	-65.0	0.	-0.**		84.0	15.1
60.0	65015.	-63.0	0.	-0.**		115.0	17.4
50.0	68723.	-60.0	0.	-0.**		92.5	25.1
40.0	73335.	-56.2	0.	-0.**		100.9	25.2
30.0	79398.	-51.4	0.	-0.**		78.7	27.9
25.0	83309.	-48.4	0.	-0.**		98.8	30.2
20.0	88134.	-49.8	0.	-0.**		108.7	24.7

\*\* AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

RELEASE TIME (MDT)		SECOND-STAGE IMPACT DISPLACEMENT IN MILES DUE TO WIND								AZI- MUTH (DEG- REES)	THEORETICAL IMPACT FROM LAUNCHER (IN MILES)		
		11-216 FT		216-4160 FT		4160-7000 FT		TOTAL					
		N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W				
RAWIN- SONDE	PIBAL										RANGE	N-S	E-W
0830	0930	4.3N	0.0	4.8N	1.0E	4.8S	2.2E	4.3N	3.2E	358.9	81.2	81.2N	1.6W
0830	1000	4.7N	1.2E	5.0N	2.3E	4.8S	2.2E	4.9N	5.7E	000.6	81.8	81.8N	0.9E
0830	1030	1.5N	2.1E	0.1N	3.3E	4.8S	2.2E	3.2E	6.6E	001.4	73.7	73.7N	1.8E
0830	1045	0.0	0.0	1.0S	1.8E	4.8S	2.2E	5.8S	4.0E	359.3	71.1	71.1N	0.8W
0830	1100	0.0	0.0	0.3N	0.4E	4.8S	2.2E	4.5E	2.6E	358.3	72.4	72.4N	2.2W
0830	1110	0.0	0.0	0.4N	0.3E	4.8S	2.2E	4.4E	2.5E	358.2	72.5	72.5N	2.3W
0830	1120	1.4N	0.4W	1.1S	0.1E	4.8S	2.2E	4.5S	1.9E	357.7	72.5	72.4N	2.9W
0830	1130	0.7N	0.0	0.0	0.1W	4.8S	2.2E	4.1E	2.1E	357.8	72.9	72.9N	2.7W
1100	*1130	0.7N	0.0	0.0	0.1W	5.1S	4.4E	4.4S	4.3E	359.7	72.5	72.5N	0.5W

AZI- MUTH (DEG- REES)	MILES FROM LAUNCHER		
	RANGE	N-S	E-W
360	76.9	76.9N	0.0
356.9	77.0	76.9N	4.8W
360	70.0	70.0N	0.0
351.4	70.8	70.0N	10.5W
003	1.2	1.0N	0.1E
N/A	N/A	N/A	N/A

TABLE XVIII. IMPACT PREDICTION DATA  
NIKE-HYDAC STV-88

\* POST SHOOT DATA

RELEASE TIME (MDT)		SECOND-STAGE IMPACT DISPLACEMENT IN MILES DUE TO WIND								AZI- MUTH (DEG- REES)	THEORETICAL IMPACT FROM LAUNCHER (IN MILES)				
		11-216 FT		216--4160 FT		4160-65000 FT								TOTAL	
		N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W						
RAWIN- SONDE	PIBAL	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W					RANGE	N-S
0830	1110	0.0	0.0	0.4N	0.3E	4.5S	2.4E	4.1S	2.7E	357.6	67.8	2.8W			
0830	1120	1.4N	0.4W	1.1S	0.1E	4.5S	2.4E	4.2S	2.1E	357.1	67.7	3.4W			
0830	1130	2.1N	0.6E	0.0	1.2E	4.5S	2.4E	2.4S	4.2E	358.9	69.4	1.3W			
0830	1150	2.3N	0.7E	0.4S	1.3E	4.5S	2.4E	2.6S	4.4E	359.1	69.2	1.1W			
1100	1200	2.2N	1.3E	0.8N	0.5E	5.1S	3.7E	2.1S	5.5E	360.0	69.7	0.0			
1100	1210	2.5N	0.8E	1.2N	1.4E	5.1S	3.7E	1.4S	5.9E	000.3	70.4	0.4E			
1100	1220	3.6N	1.8E	1.7N	1.2E	5.1S	3.7E	0.2N	6.7E	000.9	72.0	1.2E			
1100	1230	3.0N	1.1E	4.5N	0.7E	5.1S	3.7E	2.1N	5.5E	360.0	73.9	0.0			
1315	*1230	3.0N	1.1E	4.5N	0.7E	6.3S	1.5E	1.2N	3.3E	358.2	73.0	2.2W			

	AZI- MUTH (DEG- REES)	MILES FROM LAUNCHER		
		RANGE	N-S	E-W
LAUNCHER SETTING (ELEVATION 84.8 DEGREES QE)	359.0	71.8N	71.8N	1.3W
NO WIND IMPACT	355.6	72.0N	71.8N	5.5W
PREDICTED SECOND-STAGE IMPACT	360.0	70.0N	70.0N	0.0
SECOND-STAGE IMPACT, RADAR TRACK	004.3	69.3	69.1N	5.2E
PREDICTED BOOSTER IMPACT	358.0	1.1	1.1N	0.1W
ACTUAL BOOSTER IMPACT	N/A	N/A	N/A	N/A

TABLE XIX. IMPACT PREDICTION DATA  
NIKE-HYDAC BALLISTIC ROUND

\* POST SHOOT DATA

UNCLASSIFIED

Security Classification

## DOCUMENT CONTROL DATA - R &amp; D .

(Security classification of title, body of abstract and indexing notation must be entered when the overall report is classified)

1. ORIGINATING ACTIVITY (Corporate author) U. S. Army Electronics Command Ft. Monmouth, New Jersey		3a. REPORT SECURITY CLASSIFICATION UNCLASSIFIED	
		2a. GROUP	
2. REPORT TITLE METEOROLOGICAL DATA REPORT, NIKE-HYDAC STV-88 NIKE-HYDAC BALLISTIC ROUND DR-449			
4. DESCRIPTIVE NOTES (Type of report and inclusive dates)			
3. AUTHOR(S) (First name, middle initial, last name) LenE. Carter Len E. Carter			
6. REPORT DATE August 1969		7a. TOTAL NO. OF PAGES 47	7b. NO. OF REFS 0
8a. CONTRACT OR GRANT NO.		8b. ORIGINATOR'S REPORT NUMBER(S) DR-449	
a. PROJECT NO.			
c. DA Task 1T665702D127-02		9b. OTHER REPORT NUM(S) (Any other numbers that may be assigned this report)	
d.			
10. DISTRIBUTION STATEMENT This document is subject to special export controls and each transmittal to foreign governments or foreign nationals may be made only with prior approval of Atmospheric Sciences Office, White Sands Missile Range, New Mexico.			
11. SUPPLEMENTARY NOTES		12. SPONSORING MILITARY ACTIVITY U. S. Army Electronics Command Atmospheric Sciences Office White Sands Missile Range, New Mexico	
13. ABSTRACT  Meteorological data gathered for the launching of Nike-Hydac STV-88 and Nike-Hydac Ballistic Round are presented for the Space and Missile Systems Organization, AFMDC, Holloman Air Force Base, New Mexico and for ballistic studies. The data appear, along with calculated ballistic data, in tabular form.			

DD FORM 1473

REPLACES DD FORM 1473, 1 JAN 64, WHICH IS OBSOLETE FOR ARMY USE.

UNCLASSIFIED

Security Classification

**Security Classification**

UNCLASSIFIED

**Security Classification**